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Being Three Lectures delivered at the Summer Session, 1919,

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DIRECTOR-IN-CHIEF, WELLCOME BUREAU OF SCIENTIFIC RESEARCH; LATE PRESIDENT, EGYPTIAN PUBLIC HEALTH COMMISSION.

LECTURE III.—THE SOLUTION OF THE PROBLEM: PRESENT AND FUTURE.

IN our first lecture we considered the more obvious causes which produce the problem of hygiene in Egypt; in our second we discussed those which are more obscure and which, being intimately bound up with the form of central administration that is in vogue, led to a review of the latter. We will now turn our attention to the provincial organisation and see not only what problems it furnishes but how it meets the needs of health in the towns, in the villages, and in the rural parts of the Mudiriyas, as the provinces are termed in the Arabic of Egypt.

PROVINCIAL ORGANISATION IN THE PRESENT.

It is usually a relief to leave a city like Cairo or Alexandria and fare forth into the green of the Delta. The air is fresh, the sky is, as a rule, blue and cloudless, and though the scenery is monotonous the rural life is interesting and there are many spots which are eminently picturesque. In Upper Egypt one is not often far from the Nile and the Father of Waters rarely fails to please the eye and quicken the imagination.

If there is not very much to entrance the botanist and the zoologist, at least compared with some other Eastern lands, there is always something in Egypt to catch the sanitary eye and too often something also to titillate the sanitary nose. The sanitarian views a reedy water channel, and while he thinks of it turning the black alluvial soil into the richest of muds and benefiting the patient cultivator, he knows that as a source of drinking water it is, to say the least, doubtful; for may it not in parts be full of cercariæ or constitute a medium wherein typhoid or dysentery bacilli lurk, or, given the opportunity, may it not harbour the cholera vibrio? He notes the rich mud and the fellaheen ankle-deep at work in it and wonders whether or not the larvæ of ankylostomes are busy finding their way through the skin of the peasant farmers. A grove of stately date palms confronts him, and while he admires them for their beauty and their fruitfulness he cannot forget the filthy manner in which agwa is prepared. His eye roves over the picturesque, nondescript village huddling on its little mound hard by the birka with its green scum and countless frogs, and though he admits it has a beauty of its own, he cannot but recall its flies and their breeding places, its rats and their fleas, its inhabitants and their lice, and instinctively he thinks of dysentery, of plague, of typhus, and relapsing fever. And so on and so forth. You will doubtless say what a very unpleasant mind your sanitarian must have! It is one thing to find sermons in stones and books in the running brooks, but surely to conjure up parasites and disease in well-nigh every feature of the landscape is a dismal form of mental recreation, a morbid type of fancy. I grant you such is in some measure the case, but the pity is that there is good cause for these imaginings. And yet the sanitarian is, as a rule, no pessimist. He knows these evils exist, but he also knows that they are one and all preventable, and his ambition is to remedy them so far as it lies within his power to do so. Their presence arouses, or should arouse, the fighting spirit in him, and, believe me, there is something stimulating and satisfying, as well as disheartening, in waging war against the forces of disease and death in such a country as Egypt.

Divisional Inspectors.

That is one reason why we are always likely to find able young men eager to take up the work of divisional inspectors who, as you will see from the graph (Graph 1, Lecture II.), head the list of those who fight the battle of health in the Egyptian provinces.

One reason why the contest has not been so victorious as might have been hoped is to be found in the paucity of the numbers of these divisional inspectors. There are 14 provinces in Egypt, many of them large, most of them exceedingly populous. The number of inspectors has in the past been woefully few, and during the war it diminished almost to vanishing point. Furthermore, the inspectors were not resident in their districts. As a rule, they were constantly on the move, and so were not in the best position for getting into close touch with the populace and the prevailing conditions. Their duties also were far from being merely sanitary, as they had to exercise a supervision over the provincial hospitals, the medico-legal work of the Markaz doctors, and all the hundred and one matters which are intimately bound up with health problems in the provinces.

Provincial Hospitals.

A glance at Graph 1 shows that the provincial work is divided into that concerned with hospitals and that which is directly under the charge of the Markaz and outpost doctors and which is a regular *olla-podrida* of widely differing duties. The question of provincial hospitals need not detain us. In discussing Section II. of the Central Administration we saw the problems they present. It is time to turn to the Mudiriya health inspectors, who are, for the most part, stout, worthy, and elderly Egyptians who form the link between the English divisional inspectors and the Markaz doctors, and are virtually the medical officers of health of the provinces. Being as a rule advanced in years, they are not generally energetic, they are not sufficiently well paid, and few of them do much in the way of private practice. Their chances of promotion are very small, and they tend to become inactive and to concern themselves chiefly with office work. Here and there you will find a keen and able man, but, for the most part, the Mudiriyah health inspectors may be described as genial anachronisms.

The Markaz Doctor.

And now we come to one of the most important props of the health fabric in Egypt—the Markaz doctor—a Markaz being a section or district of a province. It may be a populous and prosperous district, so much so that one solitary medical officer may have as many as 100,000 people nominally under his charge. In such a case the majority die what the old Highlander called "natural deaths," for the doctor cannot get anywhere near them when they are ill. All the same he probably enjoys a most lucrative private practice to which his government duties may or may not play second fiddle. On the other hand, the Markaz may be poor and sparsely peopled, no great catch for the young and pushing graduate from the Kasr-el-Aini School of Medicine who finds himself in such a district with very poor official pay, say £E.12 a month, and but little opportunity of supplementing it in any way.

Whether his Markaz is good or bad, however, he is expected to perform the manifold duties set forth on the list shown in Graph 1. One has only to read the long column to realise that in the great majority of cases the Markaz doctor is set an impossible task, at least while his numbers remain as limited as they are at present. He is supposed to deal with infectious diseases both from the clinical and the preventive aspects, much of his time is occupied with medico-legal work, of which there is a super-abundance in Egypt, and which often proves remunerative in several directions, and he is expected to control general sanitation. Consider what this means in a large district studded with villages and seamed by canals and irrigation channels. On an ambling ass the Markaz doctor, surmounted by his red tarboosh, jogs hither and thither, often covering many miles a day. He may have to see that a birka is filled up, he may have to inspect a school. The water-supply of a mosque requires his attention, he has to furnish a report on the sanitary condition of a Government building. Questions of the regulation of water intakes fall to his share, as do those of street cleaning, slaughtering places, the enclosure of waste lands, and the selection of sites on which town refuse and fosse contents can be dumped.

His Multifarious Duties.

As if all this were not enough, he has still to keep an eye on offensive trades in his district, see to the registration of births and deaths, superintend the vaccination of the community, attend to the dispensary, examine prostitutes in places where there are no hospitals, carry out various duties connected with cemeteries, in one or other of which he must surely sometimes wish he were quietly at rest. Moreover, he attends the meetings of the local commission as public health delegate, he investigates contraventions against the law regarding the practice of medicine, he looks after pilgrims, and keeps an eye on such incomers to his district as are under the passenger control regulations. He is responsible for the sanitary state of fairs, he examines and reports on sick Government employees, he also examines the village police, and finally inspects the bodies of those who die uncertified. In addition, he usually earns his living by private practice, and presumably he eats, drinks, and sleeps!

But you will say, "The poor man must have a large staff under him to aid him in these multifarious duties." Not at all. Look at the graph. It is true that the Omdahs and Sarrafs, head-men of the villages, register the births and deaths, but I fear they often give the conscientious Markas doctor more trouble than assistance. It is true the barber, if he happens to be efficient, may render considerable aid; but, after all, who is the barber? He is merely an unqualified person who in all probability has inherited his office, and though he may be highly intelligent and carry out his own minor duties of vaccination, cupping, and so forth, in a satisfactory manner, he cannot, in the nature of things, take much of the load off the shoulders of the Markaz doctor. There is no one else, for the Daya, as we have seen, if not negligible, is usually dangerous. It is only when epidemics occur that our harassed friend gets special help and even that is only in one particular. In the strict sense of the term there is no sanitary staff whatever and rural Egypt lies largely at the mercy of the microbe, the helminth, and the fly.

Administration in the Governorates.

You will note that under the heading Provincial Organisation mention is made of the health administration in the Governorates—that is to say, in Cairo, Port Said, Suez, and Damietta. Cairo and Port Said have medical officers of health; Suez and Damietta so-called health inspectors.

We considered the conditions in Cairo in our first lecture and need not recapitulate. Of late years things have altered greatly for the better in certain localities, thanks to hard work on the part of a very capable medical officer of health and to the partial completion of the great drainage scheme, the sewers of which cast their contents upon the desert far from the city and cause it to blossom, if not like the rose, at least like a nosegay, for the trees and verdure of the sewage farm now form a feature of the landscape, and there was never yet a sewage farm without an aroma.

Recently, also, the Public Works Department has been erecting public conveniences in the streets, and these, well-designed and with the latest sanitary improvements, must be regarded as a very considerable hygienic advance. There still remains, however, a great necessity for public drinking-fountains supplying pure water. The latter is available, for there is a large installation of mechanical filters, but it is not to any extent at the service of the poorer parts of the populace.

Cairo, Port Said, and Alexandria.

The Qism medical officers whom you see mentioned on Graph 1 are really analogous to the Markaz doctors of the provinces so far as their work is concerned. Each looks after a division or district of the city, and though he has not to traverse great distances like his country confrère, he has more or less the same cheerful variety of duties and has very little leisure to devote himself to what we may call pure sanitation. At the same time he has assistance which the Markaz doctor lacks, for there are properly organised disinfecting gangs and the rudiments of a sanitary staff. Cairo, indeed, has really made a start in the right direction, though it is still a very long way from a hygienic millennium.

Port Said is also somewhat progressive, for under the British medical officer of health there is a senior medical man who devotes himself almost entirely to sanitary work, while his junior is entrusted with purely medical duties.

Very different is the state of matters in Alexandria, which, as we have stated, is a municipality and hitherto has been almost entirely a law unto itself. In other words, it has not been controlled by the Public Health Department. The latter has merely had the power to intervene when some epidemic raging in the city threatens danger to other places, a fine example of shutting the stable-door when the steed has been stolen. The Qism doctors who are supposed to safeguard the public health in Alexandria are not trained sanitarians and are permitted to engage in private practice. Though there is a medical officer of health, there is no expert control. There are no qualified sanitary inspectors. Indeed, the whole health administration of this wealthy port is radically wrong, and it is no wonder that the insanitary conditions we described in our first lecture have been the subject of adverse comment in the press, and that repeated outbreaks of typhus fever have evoked well-merited criticism and a clamour for reform.

FUTURE SANITARY ORGANISATION.

Our review of existing health problems in Egypt is now at an end, and we turn to the future. Shortly after the retiral of the last Director-General of the Public Health Department, the High Commissioner appointed a Commission to inquire into the future organisation and work of that department. Very nearly a year ago the Commission began its sittings, examined many witnesses, studied much documentary evidence, carried out numerous inspections, and in the fullness of time was delivered of a report, with the salient features of which we shall now deal. Whether or not the problem of hygiene in Egypt will be solved if the recommendations of the Commission are adopted and carried into effect no one can say. Egypt being Egypt, it is quite possible, nay probable indeed, that the proviso will never be forthcoming, at least in toto. Still, it may be said that the council of four[1] constituting the Commission found themselves in complete unanimity and that what public opinion exists in Egypt, generally speaking, approves their findings.

A MINISTRY OF HEALTH.

What are the findings? I direct your attention to a new graph (No. 2) and you will note at once the words "Ministry of Health." Despite some evidence to the contrary, the Commissioners were persuaded that the establishment of such a Ministry was essential. The reasons for this belief have already been recorded in the weighty words of Dr. Cyril Goodman, who further states:—

"The reorganisation of Egypt on constitutional lines, rendered necessary by the Protectorate, offers a peculiarly favourable opportunity of giving public health a place in the constitution commensurate with its importance to the country. Public order, finance, irrigation, agriculture, education and public health constitute the six principal interests of Egypt and the six principal duties of Great Britain towards its Protectorate. The present scheme of government includes in its governing body representatives of each of these interests, *with the exception of public health*. If the policy of Great Britain towards Egypt is to be placed on the broadest basis of material, mental, and physical advancement of the people then public health must be given without delay representation on the Council of Ministers, on the Council of Advisers, and it must be recognised as the direct adviser of the High Commissioner on matters of public health.

It must be frankly stated that those who, while expressing sympathy with the idea, urge delay in its execution must be considered as inimical to the movement itself, for a successful public health policy must grow with the fundamental institutions of the country. It must be built into, not be grafted on, the constitution. If, therefore, the importance of public health in Egypt is sufficiently great to justify its inclusion as a Ministry amongst those which direct the policy of the country, then it is clear that during and not after the remodelling of the institutions of the country is the proper time for that inclusion."

[1] The Commission was composed as follows:—President: Lieutenant-Colonel Andrew Balfour, C.B., C.M.G., R.A.M.C. Members: Lieutenant-Colonel G. E. F. Stammers, R.A.M.C.; Mr. E. S. Crispin, Director, Medical Department, Sudan Government; and Dr. Charles Todd, O.B.E., Director of Laboratories, Department of Public Health. Secretary: Mr. H. Sheridan.

MINISTRY OF HEALTH.

AS RECOMMENDED BY

THE PUBLIC HEALTH COMMISSION, 1918.

GRAPH No. 2.

MINISTER OF HEALTH.

UNDER-SECRETARY OF STATE.

TECHNICAL ADVISER and DIRECTOR OF MEDICAL INTELLIGENCE.

DIRECTOR-GENERAL.

Bureau of Information and Library.
Museum of Medicine and Hygiene.

CENTRAL ORGANIZATION.

Director of Sanitary Services.

Sanitation of Villages.
" of Schools and *Kuttabs*.
" of Government Buildings.
" of Mosques.
" of Public Baths.
" *Birkas*.
Railways and Canals (Sanitation), including Inland Water Transport Boats.
Prisons (sanitation).
Water supplies.
Nuisances.
Food control and *abattoirs*
Etablissements insalubres
Fly campaign.
Mosquito campaign.
Building regulations.
Drainage.
Dépotoirs.
Fencing of waste lands.
Sanitary Training Centres.
Cemeteries.

Director of Epidemic Services.

Epidemics.
Land quarantine, Pilgrims and passenger control.
Sea quarantine.
Frontier Districts.
Disinfection.
Cordons.
Control of contacts.
Mulids.
Communicable diseases, apart from epidemics (such as malaria, etc.).
Inland Water Transport
Vaccination.

Director of Medical Services.

[Technical Inspectors for General Hospitals, Ophthalmic Hospitals, Schools and Pharmacies].
General Hospitals (including Qasr el 'Aini).
Ophthalmic Hospitals.
Infectious Hospitals.
Dispensaries.
Children's and Women's Hospitals, Dispensaries and Out-patient Clinics.
Practical training of Barbers, Nurses and *Dâyas*.
School hygiene.
Pharmacies and Poisons.
Patent medicines.
Railways, Police, Prisons and Coast Guard Medical Services.
Medico-legal cases.
Lock Hospitals.
Prostitution and Venereal Clinics.
Central Medical Commission.
Homes for Incurables.
Leper Asylums.

SECRETARY-GENERAL.

Personnel.
Registration of Vital Statistics.
Stores.
Accounts.
Contentieux.
Clerical organization and administration.
Departmental Orders.
Central Records.

Director of Lunacy.

Lunacy administration and direction of Lunatic Asylums.

Director of Medical Education.

School of Medicine.
School of Dentistry.
School of Pharmacy.
Research Laboratories.
Curriculum for Nurses, Midwives and *Dâyat*.
Control of practice of:—
Medicine.
Dentistry.
Pharmacy.
Vivisection.

Director of Public Health Laboratories.

[Technical Inspector, Water Service].
Bacteriological.
Protozoological.
Chemical.
Water Control Service.
Food Control Service.
Sewage Control Service.
Vaccine Institute.
Antirabic Institute.
—
Applied Research.

Director of Sanitary Engineering.

Duties chiefly advisory.

CENTRAL ORGANIZATION.

[Divisional Inspectors]
[QUALIFIED SANITARY INSPECTORS.]

PROVINCIAL ORGANIZATION.

Mudiriya Health Inspectors.

Markaz, Bandar, and Outpost Medical Officers.

INSPECTORS OF NUISANCES.

Sanitary Barbers and *Dâyas*.

CONSERVANCY STAFF.

DUTIES:—

Special Epidemic Staff.
Disinfectors.
Rat-catchers.

General sanitation.
Etablissements insalubres.
Communicable diseases.
Vaccination and vaccination inspection.
Medico-legal examinations and reports.
Pilgrims.
Quarantine.
Passenger control.
Dispensary.
Prostitutes.
Mulids.
Schools and *Kuttabs*.
Prisons and Lock-ups.
Cemeteries.
Registration of births and deaths.
Medical Commission work:
Examination of sick Government employees.
Examination of *Ghafirs*.
Public Health delegate on Local Commission.
Public Health representative on the Markaz Sanitary Commission.
Contraventions against Public Health Laws and Regulations.

Hospital Medical Officers.

General Hospital.
Permanent Infectious Hospital.
Examination of Prostitutes.
Inspection of certain Prisons.
School medical inspection.

Provincial and Quarantine Laboratories.

Cairo.		Alexandria.		Port Said.		Suez.		Damietta.	
Public Health.	Medical.	Public Health.	Medical.	Public Health.	Medical.	Public Health.	Medical.	Public Health.	Medical.

PROVINCIAL ORGANIZATION.

REFERENCE:—

New posts are shown thus in ***ITALICS.***

Posts in which there is a change of function are shown in ***Italics underlined.***

Posts shown in brackets indicate that the holders are not necessary links in the chain of administration.

Corrigenda.—There are two inaccuracies in Graph No. 2: MINISTER OF HEALTH and [QUALIFIED SANITARY INSPECTORS] should have been printed in *ITALICS* (see key reference above).

The Head of the Ministry.

It remains to be seen how such a Ministry should be constituted. At its head there must, of course, be a Minister —an Egyptian—and he must be an official thoroughly versed in public affairs, interested in the welfare of the people, in social problems, and in scientific progress. It is not impossible to find such a man in Egypt, and, once found, his words would carry great weight in the Council Chamber. He need not of necessity be a medical man. Indeed, the appointment of a layman would possess certain advantages, as it would ensure that the Minister of Health was on the same footing as other Ministers, was appointed for the same political reasons, and would be interchangeable with them if a Ministerial rearrangement was required. In immediate command it is essential to have a British Under-Secretary of State, a medical man, who must needs possess a long and intimate knowledge of health matters in Egypt and be conversant with the intricacies of governmental machinery in that country. He will control the sanitary, epidemic, and medical work of the Ministry. As a glance at the graph shows, there will be a Department of Medical Education under him, a new departure and one necessitated by the present state of Egyptian affairs. His duty will be to frame future policy and indicate how health legislation should best be carried out, to see that the work is conducted upon a sound scientific basis and that scientific research, which alone can point the way to reform, receives due encouragement. He must also be capable of taking that broad view on which so much depends and possess those qualities of tact and firmness which count for so much in Eastern lands. Finally, as the Commission reported, "it is essential that he should have direct access to the High Commissioner, so that, armed with the weapons of an expert, he may be able to plead his cause to good effect."

The main driving force of the Ministry will, however, undoubtedly be the Director-General, who should not be too old a man. Public health work is a campaign against Field-Marshal Death and his redoubtable generals—to wit, Dirt, Destitution, Disease, Ignorance, Superstition, and, by no means the least doughty, the fighter with the double-barrelled name, General Vested-Interests! Hence, as in war, the commander must unite a certain degree of youthful energy and vigour with the experience and powers of judgment which are so necessary. Not only must he be a capable organiser, but he must combine strength and sympathy in his work, for, lacking sympathy, he will probably fail in a land like Egypt.

The Technical Adviser.

The next post is a new one, though it exists unofficially. It is that of Technical Adviser and Director of Medical Intelligence. I am not sure but that it is the most important of all, and though the duties of the post would be chiefly advisory, its holder would not be wholly divorced from administrative work, for, as you will observe, he would control the scientific side of the Health Ministry in so far as hygiene is concerned. Here is what the Commission say about this appointment:—

"We consider a post of this nature to be of the very greatest importance. The Technical Adviser would not only act in that capacity to both the Under Secretary and the Director-General, but he would conduct a Bureau of Information. Controlling the main library, keeping himself closely in touch with what goes on in other countries, studying the vast literature, corresponding with similar departments of other Governments, he would be in a position to furnish invaluable information to the chiefs of the various Sections, and, by issuing instructive pamphlets and circulars both to Public Health officials and to the medical profession in Egypt, he might speedily make the Ministry of Health a real power in the land. Moreover, he would collect and collate information from local sources, so that at any time he would be in a position to advise on problems arising in Egypt itself. The lack of a bureau of this kind in the Medical Department of the British War Office has made itself severely felt in the various tropical and subtropical areas of hostilities. Such work, properly carried out, effects great saving in both time and money, and possibly does more than anything else towards making a Government Department really efficient and up-to-date."

A Museum of Medicine and Hygiene.

A further proposal of the Commission is the establishment of an Egyptian Museum of Medicine and Hygiene, which would be of an educational nature, and, under the guidance of the Technical Adviser to the Health Ministry, should prove itself a stimulus towards sanitary reform. It is not suggested that this should be a Government undertaking. So truly national a project may well find support amongst the wealthy and influential of Egypt. As the Commissioners remark:—

"There is undoubtedly a need for some such institution in Egypt, where, in a graphic manner, information will be furnished, both to officials and to the populace generally, as regards the diseases of Egypt, the insanitary conditions prevailing in the country, methods of dealing with epidemics, and means of rendering towns and villages clean and healthy. The work of hospitals and dispensaries would be illustrated, the rôle of insects in disease explained, the danger from faulty and deficient dietaries set forth, together with measures of prevention and cure. In fact, a great centre of instruction would be established—a school where one might learn with little effort, where interest would be excited and sympathy aroused."

SECTIONS OF THE CENTRAL ADMINISTRATION.

At this point I may mention that the Commission recommended a Board of Health for Egypt, a body which undoubtedly would be of benefit in many directions. The results of its deliberations, as suggested by Dr. Goodman, should be published for the information of the public. We need not here enter into the question of its constitution, but will continue our consideration of the Central Administration under the new scheme. Three of the sections we previously discussed become departments and one disappears, the ophthalmic section being, for purposes of economy and facility in administration, attached to the Department of Medical Services, which is the old hospital section.

The new Department of Sanitary Services will require a director intimately acquainted with Egyptian conditions. His duties have been set out in rather more detail than were those of the director of Section I., and the only one of them to which reference need now be made is that indicated by the term sanitary training centres. As will in due course be seen, these are intended as schools of sanitation for training certain inspectors of nuisances whom it is proposed to create for the purpose of dealing with village sanitation. The latter, which, as you will see, heads the list, is perhaps best considered under the proposals for provincial administration.

The Department of Epidemic Services shows little change from Section IV., save that the suggestion is made to bring sea quarantine under it. This is a difficult matter, for it involves complex international questions, and no one can say how it will yet be settled. Inland water transport is mentioned, as it plays, or may play, an important part in the spread of plague and cholera when these diseases are epidemic in Egypt.

The Hospital Section becomes the Department of Medical Services, and the shortcomings which have been mentioned indicate the measures required for their remedy. In addition to an increase in general and infectious hospitals and a new policy as regards the treatment of prostitutes in the former, it is essential that technical inspectors be appointed to visit periodically the 23 general Government hospitals and to reside in them from time to time for limited periods. In some of these hospitals, also, post-graduate courses might with advantage be instituted.

Absorption of Other Medical Services.

The medical service of the Ministry of Education might with advantage be brought under the control of the Ministry of Health. The medical inspection of school children in Egypt is of the highest importance and requires to be developed with the help of technical inspectors. It will be seen that those medical services which have been outside the fold or have strayed from it are to be shepherded into it, so that the whole health work of the country may be properly coördinated, while the medico-legal work no longer figures under general sanitation, but is brought into this department. It would, indeed, be well if some of the burden of this class of work could be borne by the Ministry of Justice, but the question is a difficult one, and the Commission had to content itself with expressing some pious hopes in that direction. Certainly a great deal of the time of the Markaz doctors is taken up with duties which are nearly as much legal as medical.

The medical control of prostitution and venereal diseases has been relegated to this department, and only those who have carefully studied the problem in other countries can appreciate all that it involves. More lock hospitals are required, clinics for the treatment of venereal diseases must be established, the populace must be instructed, and facilities for preventive treatment provided. The whole question bristles with difficulties, but we know that these exist to be overcome, and money and determination, and above all things common-sense, can work wonders.

Provision for Incurables and Lepers.

As regards provision for incurables and lepers, I cannot do better than quote again from the Commission's report:—

"Homes for incurables would meet a great need in Egypt. The country is full of crippled and debilitated mendicants, for whom little or nothing is done. The *tekiyas* of the Ministry of Waqfs deal with a few incurable cases, but the number of these establishments is quite inadequate. These unfortunate individuals are often beggars, are liable to become foci of infection, and present a problem which can only be solved by making provision for them. Even then, only a certain proportion of them can be housed, but this will help in some measure. So far as Cairo and its neighbourhood is concerned, the proposed transference of Qasr el 'Aini hospital from its present site would leave vacant a suitable building for a hospital for incurables; others, however, are required in various parts of Egypt. This is not the work for the Ministry of Health, except as a controlling and inspecting body.

"It would appear to be the privilege of the Waqfs Medical Services to make such provision. Amongst charities, that which benefits the aged, the infirm, and those who are beyond the skill of the physician and surgeon surely holds a high place. It is true that some waqfs are allotted by their donors for definite purposes, but we are assured that there are ample funds on which there is no reservation and which might well be devoted to this good cause.

"Closely associated with the question of incurables is that of lepers. We have been unable to obtain any reliable statistics as regards the present prevalence of leprosy in Egypt, but there are undoubtedly a number of lepers in certain places—for example, Damietta. There is nothing to prevent them from handling foodstuffs intended for sale; and though leprosy does not appear to spread much in Egypt, and though the channels of communication from the sick to the sound are not fully known, such risks should certainly not be permitted. Even if, from the public health point of view, it may not seem very necessary to segregate lepers in Egypt, there is the humanitarian aspect of the case to be considered, and an asylum is undoubtedly required for maimed and helpless lepers, as well as for those who are probably an active source of infection. A leper colony in which work could to some extent be carried out on the land would be a wise provision, and the attention of the Ministry of Waqfs might well be drawn to this charitable object.

It will be seen that the lunatic asylums should form a section of the Health Ministry under a Director of Lunacy. This is in accord with the modern trend of thought as regards the work of the alienist. Lunatic asylums are, however, so specialised that they cannot be grouped with other hospitals, but must form a separate department.

MEDICAL EDUCATION IN EGYPT.

And now we reach a very important subject—that of medical education in Egypt, which, however, can only be very briefly considered. We saw that the Kasr-el-Aini School of Medicine owed its foundation to Clot Bey. It has proved, especially of late years, a most useful institution both in the way of teaching and of research, and its professoriate has included men of European reputation. Unfortunately, the school is now too small to meet the needs of the country, and though it attracts the intellectual élite from the secondary schools the Ministry of Education has to refuse many applications owing to lack of accommodation. The vast majority of the students who pass through the school find employment in the Public Health Service, and in the absence of any University system in Egypt it is deemed advisable to bring medical education into the Ministry of Health, there to be placed under the control of a director, who must of necessity be given a free hand not only as regards medical education, but with respect to the training of dentists, pharmacists, nurses, midwives, and dayas. Medical research work, demanding access to clinical material and requiring the calm of academic surroundings for proper development, would be conducted in the laboratories of the school of medicine and would be distinct from the applied research work of the public health laboratories, which is of a different type though equally important.

The curriculum of the school can be improved in certain directions, as by establishing instruction in diseases of children and in protozoology. A chair of hygiene should undoubtedly be instituted and a diploma granted, either in public health alone or in tropical medicine and hygiene. Like the medical school, the great teaching hospital of Kasr-el-Aini requires extension and improvement. Indeed, a new building on a new site has long figured on a programme which has never been fulfilled. Facilities for dispensary work might prove valuable, and the question of training Egyptian women doctors is one meriting serious consideration.

In Egypt there is also great need for a powerful board to control the practice of medicine, dentistry, and pharmacy, and to deal with all questions of malpraxis and vivisection.

It will be seen from the graph (No. 2) that it is proposed in certain respects to expand the work of those public health laboratories. Protozoology requires more attention than hitherto, and food control and sewage control services must be established. As will be noticed, there is a plan to decentralise the work in some measure by means of provincial laboratories, while the existing quarantine laboratories should be brought under the sway of the Director of Medical Intelligence. The chief sanitary engineer of the old graph becomes a Director of Sanitary Engineering, a subject which will undoubtedly become increasingly important as schemes for drainage, water-supply, disinfection, and so forth develop.

THE SOLUTION OF PROVINCIAL ADMINISTRATION.

Such are the main recommendations of the Commission as regards central organisation. Let us see how it proposes to solve the problem in the provinces. Recognising that there are far too few divisional inspectors, it recommends an ample increase in their numbers and insists that they should live in their districts, be housed, well paid, and given every facility for getting about rapidly. Opportunities should also be afforded them for seeing in rotation something of the Central Administration and gaining an insight into the work of those departments of the Ministry, the chief posts in which some of them will one day fill.

Introduction of the Sanitary Inspector.

There is nothing very novel in these recommendations, but an entirely new idea, so far as Egypt goes, is voiced by the suggestion to introduce qualified British sanitary inspectors, one of whom would be attached to each divisional inspector to aid him in his work and, under certain conditions, to train those inspectors of nuisances whom we have mentioned and who figure in the graph. There can be no doubt that intermediaries of this kind are greatly needed. If the right class of man is obtained—and he should be forthcoming in greater numbers now the war is at an end—he should go a long way towards solving some of the problems I have mentioned, for efficient inspection means everything in this kind of sanitary work. Qualified sanitary inspectors of this type have proved their value in the Sudan. They are employed under the Colonial Office administration in various parts of Africa, and I hope to see the day when it will be possible to train them in the rudiments of tropical hygiene before they leave this country for their posts abroad. Their ordinary training is excellent so far as it goes, but at present time is wasted after they reach the tropics in giving them instruction in antimosquito measures, in native habits and customs, in conservancy methods in vogue in hot countries, in new aspects of the fly question, in those improvisations which form so great a part of the sanitarian's outfit abroad, and in all those *minutiæ* which mean so much and which can perfectly well be imparted to them by one having experience. It is true that many have become *au fait* with these matters during the war, but we have to think of the future, and the sooner this training is instituted the better for the Empire. It has been too long delayed.

We need not again consider the strictly medical work in the provinces, but from what has been already said it is clear that the Mudiriya health inspectors should be better paid and have better prospects. The posts should be filled by

younger and more energetic men who may be expected to take an active interest in their duties, especially if they are diplomates in public health.

Two Categories of Markaz Doctor.

And now we come again to our friend the Markaz doctor. What is to be done about him and his manifold perplexities? Two courses may be followed. The ideal scheme, and one which eventually must be adopted, is to divide the Markaz doctors into two categories according to the work, sanitary and medical, as shown in the subjoined table:—

Markaz Doctor in charge of Public Health Work (excluded from private practice).	Markaz Doctor in charge of medical work (allowed private practice).
General sanitation.	Communicable diseases (clinical).
Etablissements insalubres.	Medico-legal examinations and reports.
Communicable diseases (public health aspect).	Dispensary.
Vaccination and vaccination inspections.	Prostitutes.
Pilgrims.	Medical Commission work:—
Quarantine.	Examination of sick Government employees.
Passenger control.	Examination of *ghafirs*.
Mûleds.	Prisons (in certain places).
Schools and *kuttabs* (sanitation).	Schools (medical).
Prison lock-ups (sanitation).	
Cemeteries.	
Registration of births and deaths.	
Public health delegate on Local Commission.	
Public health representative on the Markaz Sanitary Commission.	
Contraventions against public health laws and regulations.	

The Markaz doctor engaged on sanitation would not be allowed private practice, would be freed from medico-legal work, and would have an initial salary of £E.25–30 a month. He would also be pensionable. From this category the Mudiriya health inspectors would be chosen.

The Markaz doctor engaged on medical work would be paid as at present, would carry out the official duties listed in the above table, and would be on contract until found satisfactory. He could then be placed on the cadre. As at present, his chief prospects would be in the direction of private practice.

Provisional Measures.

Unfortunately, at present this scheme cannot be carried into effect, for there are not enough Markaz doctors in Egypt, there are not enough private practitioners, there are not sufficient medical graduates. Still, it might be tried on a small scale in certain districts, a course the Commission recommended.

The second plan is to multiply the number of doctors in each Markaz, strictly defining their respective areas, and making no change in the nature of their work or in their pay. Even this simple solution of the problem will be difficult of realisation until the medical school is enlarged and is able to cope with the medical needs of the country. How true is the old proverb, "Things move slowly in the Nile Valley!" "Haste," however, we know, "is begotten of the devil," and if we can only combine the slowness with sureness no great harm will be done, provided that slowness does not degenerate into sluggishness, a very different affair.

The Inspector of Nuisances and Sanitary Barber.

Inspectors of nuisances may be recruited from the ranks of the better educated sanitary barbers or from men of the artisan or mechanic class, or possibly even from ex-non-commissioned officers of the Egyptian Army. Trained by the sanitary inspectors, paid out of local funds, in close touch with the people, the inspector of nuisances would supervise the scavenging and cleansing of villages, and, if village latrines and incinerators prove feasible, he would see that they are properly used and kept in repair. He would inspect water-supplies, markets, *birkas*, and other mosquito-breeding places. He would endeavour to show the people how their villages could be improved and how they could live in more cleanly and also more comfortable surroundings. He should have some knowledge of building construction, and of the rôle of flies in the spread of disease.

The sanitary barber, who should also be paid, would, in addition to his present duties, furnish information on matters of public health interest occurring in the village, while a conservancy staff would represent the lowest rung in the sanitary ladder.

The Working-out of the Scheme.

Here, then, is a definite system, providing, apparently, for all contingencies, costly no doubt but not unduly so, and avoiding too heavy a strain upon the central treasury. It remains to be seen if it will be adopted in its entirety and, if adopted, how it will serve the medical needs of Egypt. It has been said that the report of the Commission afforded cause for complaint by the Egyptian Nationalists inasmuch that, save in the case of the Minister, all the higher posts in the Health Ministry were allotted to Britishers. The statement is doubtless true, but requires to be qualified, for, owing to the lack of technical training which has been mentioned, there are at present no Egyptian doctors capable of holding these posts. Furthermore, I would like to point out that the Commission expressly recommended an improvement in the status and pay of the Egyptian Mudiriyah health inspectors and advocated their advance to divisional inspectorships as soon as possible. Their report also provides for a large increase of Markaz doctors and the creation of a new class of Egyptian employees—namely, the inspectors of nuisances. The national aspect of the question was duly and sympathetically considered and, as has been stated, recommendations were made which, if carried into effect, will create a body of Egyptian hygienists capable of serving their country to the best advantage in the interests of the public health.

Application to Urban Areas.

In the case of the individual towns measures closely resembling those just detailed must be applied. Cairo requires qualified sanitary inspectors and inspectors of nuisances. So does Alexandria. The latter city must no longer be permitted to act as a law unto itself in public health matters. The Commission recommend that a Controller be appointed by the Ministry of Health, which itself should approve all public health appointments. The Qism doctors should not be allowed private practice and should devote their whole time to public health duties, in which they should be specially trained. In short, a radical change is needed if the stigma now resting on the city is to be removed and the health of its populace safeguarded. At the same time, it is only fair to state that the chief engineer of the municipality has been busy with schemes for replacing the echèches of which I spoke in the first lecture, by model dwellings. Building regulations have also been framed and a town plan introduced, so that the outlook is distinctly more hopeful. As regards other towns, the method in vogue at Port Said may be followed with advantage until such time as each is able to work out its own sanitary salvation on a sound basis of local self-government.

Time does not permit a discussion of other points considered by the Commission, such as the future of the medical services of the Ministry of Waqfs, that department which controls large funds earmarked for charitable purposes, the amendment and progress of public health legislation, the dissemination of information, and the great desirability of lay officials taking a real interest in sanitary reform and keeping themselves acquainted with what is happening in the hygienic world of Egypt.

THE REMOVAL OF A REPROACH.

It all sounds very simple, but in reality how hard it is to make headway against ignorance, inertia, and prejudice! Let us, however, hope for the best.

Along with this reform, or rather advance, in public health administration an active campaign should be instituted against these three deadly enemies of the fellaheen—bilharziasis, ankylostomiasis, and pellagra. Leiper and his colleagues have already thrown much light on the first-named, we know a great deal about the second, the third alone remains a mystery. Given money and research on sound lines, the mystery will assuredly vanish, and given funds and a progressive sanitary policy the people of Egypt will be freed from the burden of all three diseases.

I have spoken in vain if it is not apparent that the sanitary condition of Egypt still remains in many respects a byword and a reproach. Great Britain has declared that ancient land a Protectorate, and has protected it from the Teuton and the Turk on the east and the Senussi and the Turk on the west. There are, however, other foes of its own household, and unless this country realises its responsibilities and undertakes to rout the forces of disease which hold Egypt in thrall, it will have failed in its duty, and one day there will be written of it, as there was of Belshazzar of Babylon, "Mene, mene, tekel, upharsin"—Thou art weighed in the balances and art found wanting.

A STUDY OF HYPER-ADRENALISM:

ITS INFLUENCE IN PRODUCING CONGENITAL PYLORIC HYPERTROPHY AND SUBSEQUENT OBSTRUCTION.

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FROM the time, over 20 years ago, when John Thomson and Finkelstein began to associate specific signs and symptoms in babies with a large thickened pylorus (until then recognised only in the post-mortem room), there have been several theories advanced and much discussion has taken place as to the pathogenesis of this condition.

In the typical case there is undoubted true hypertrophy. There is an increase in both the number and size of the circular muscle fibres, as has been repeatedly demonstrated. It is concerning the cause of this hypertrophy that there has been so much speculation. The explanation most commonly offered has been that the hyperplasia of the musculature of the pylorus is caused by an error in its development. Apart from the fact that it is very difficult to conceive of any error in development resulting directly in true hypertrophy, there is neither corroborative evidence nor any analogous condition to substantiate this theory. The natural explanation of hypertrophy is overaction or spasm. Still and Thompson were inclined to attribute it to spasm induced by a lack of coördinate action between stomach and pylorus.

Hyper-adrenalism before Birth as the Chief Cause of the Spasm.

It is the purpose of this paper to suggest that the spasm inducing hypertrophy is primarily due to hyper-adrenalism before birth, and that other subsidiary post-natal causes determine the persistence or recurrence of the spasm. This condition is due to a lack of balance between the secretions of the various endocrinic organs in the process of their development and involution, which may result either in a relative or an absolute hyper-adrenalism.

Whether this condition is congenital or not is also a much discussed point. The balance of evidence seems to indicate that it must be congenital. It is true that the majority of cases first show symptoms at about the third week. It is equally true that, in many instances, the child forcibly ejects the first and every subsequent feed. Moreover, at operation, the hypertrophy is usually found to be so marked that it is difficult to believe that it could have arisen during extra-uterine life. Further, many babies are presented for examination and treatment exhibiting gastric peristalsis and projectile vomiting. In the absence of a palpable tumour, congenital pyloric stenosis should not be the diagnosis. A careful history and observation will show that varying amounts of food pass through the pylorus, inasmuch as there are occasional periods without vomiting and with normal stools. The symptoms are due to improper feeding, gastritis, or phimosis among many other causes. The child is treated empirically, by regulation of its feeding, proper management of the gastritis, or the performance of circumcision. Thus the symptoms are relieved without any apparent permanent change having taken place in the muscle of the pylorus. If the spasm persisted for a long time, as it does in many instances, hypertrophy sufficient to warrant surgical intervention might result. This never happens in practice. Therefore it must take a great deal longer for spasm to produce hypertrophy than many have hitherto thought.

From these considerations, then, one is forced to the conclusion that the hypertrophy in the cases under consideration exists from before birth, and that whatever influence has been at work to produce this change must have existed for a long time. This being so, one must look for some ante-natal force which is capable through its prolonged action of producing this change. It is not, then, the occurrence of hypertrophy some time after birth which determines the onset of symptoms. This may exist in widely varying degrees, and it is the degree of added spasm from one of many causes which will determine the time of appearance and severity of the symptoms in those cases where the amount of hypertrophy at birth is not excessive.

Swale Vincent, Sharpey Schafer, Priestly, Elliott, and many others have shown how important from a developmental point of view are the endocrinic organs and how finely adjusted is the balance between their hormones. Medical literature is full of reports as to the breaking down of this balance in adult life. If this is so, how much more readily may one accept the possibility of a lack of balance at birth and before, when developmental requirements are urgent and physiological processes so active. If this disturbance in balance results in a relative or absolute excess of the suprarenal medullary hormone, spasm of any non-striated muscle may result. Keith has shown that both the pylorus and the medulla of the suprarenal gland become differentiated at about the third month of intrauterine life. Since excessive suprarenal secretion produces spasm in non-striated muscles, this would allow plenty of time for spasm induced by any excessive suprarenal secretion to bring about hypertrophy. He also states that before birth the gland is larger than the kidney, and at birth may be the same size. After that it rapidly reaches its normal relative size.

Sharpey Schafer, in his blood pressure experiments with adrenalin, noted that spasm of the pylorus was produced when he injected the secretion into the suprarenal vein. It is not claimed for a moment that adrenalin has a selective action on the muscle of the pylorus. The same experiments showed that spasm was produced at many places in the gastro-intestinal tract—e.g., the ileo-cæcal valve and the junction of the pelvic with the rectal colon. The fact that untoward results of this spasm are noted so rarely in situations other than the pylorus is explained by the peculiar anatomical and secretory relations existing between the stomach, pylorus, and duodenum. This relationship favours the establishment of secondary vicious circles which would determine the persistence or recurrence of spasm. The objection might be raised that if hyper-adrenalism can exist in the ante-natal condition we should see more frequent evidence of its effects after birth. The reason that we do not is that the degree of hyper-adrenalism can never be constant, and only those cases would show symptoms where it is marked. In the post-mortem room one has noted many times slight thickening of the pyloric muscle in the bodies of babies who have died without any clinical evidence of obstruction at the outlet of the stomach. This thickening is quite apart from the apparent hypertrophy which sometimes occurs just at death, and is noted in bodies from which rigor mortis has passed off. Whether this thickening is congenital or not is, of course, pure conjecture. It may have been due to prolonged spasm from one of the several causes mentioned elsewhere. Both in these cases, and in those dying with true hypertrophic stenosis, has vain search been made for any abnormal or unusual appearance of the suprarenal gland. If the assumption of ante-natal hyper-adrenalism is correct, there need be no abnormality of the gland apparent after birth. As most of the examinations are made when the infant is at least several weeks old, the process of involution would be complete and only the effects of the plus secretion before birth would remain. Moreover, a gland which undergoes such marked changes in its development and involution may easily have had its balance with the other glands of internal secretion upset a long time before birth, with resulting hyper-adrenalism. This may exist in widely varying degrees and would determine the amount of hypertrophy present at birth. It cannot be claimed that in all cases the hyper-secretion is controlled by changes in the gland itself. The ready response of its secretion to stimuli from the semilunar ganglion would lead one to expect that in some cases there is hyper-adrenalism following excessive stimulation of the splanchnics. Tyrrell Gray and Parsons have shown the effect of excessive stimuli passing to the sympathetics. Their work gives a possible explanation of the added pyloric spasm in the frequently associated condition of phimosis. If the development of the suprarenal gland may be excessive or its involution unduly delayed, one would expect sooner or later to find an abnormally large gland associated with hypertrophy of the pylorus or other non-striated muscle.

Recently there was admitted to Dr. G. F. Still's ward at the Great Ormond Street Hospital a boy aged 8 weeks. Although the mother was ill throughout her pregnancy, the child was born at full term and was apparently healthy. He was breast fed and never gained. He was constipated and had vomited at irregular intervals practically from birth. The mother brought him to hospital because of the vomiting and wasting, and also because of a very distended abdomen. Examination on admission showed marked wasting. The abdomen was too distended to permit of any satisfactory examination, and dilated coils of intestine bulged through the abdominal wall like the rungs of a

ladder. There was stenosis of the urinary meatus and marked phimosis of the type described below—that is, a well-developed penis with the prepuce stretched tightly over the glans. Before the clinical investigation could be completed the child died. At the post-mortem examination rigor mortis had passed off, and the external features as noted above were confirmed. There was stenosis of the œsophageal and pyloric openings of the stomach, and a slight hour-glass constriction about the middle of the viscus. The stenosis was not extreme, but there was definite thickening of the muscle at the pyloric orifice and to a lesser degree at the œsophageal opening. The duodenum and the upper part of the jejunum were contracted and small. From this point down there was a gradual increase in the calibre of the gut, which was considerably dilated in the lower part of the ileum, and the whole colon as far as the junction of the pelvic with the rectal portions. At this point there was another definite constriction. Below this point the bowel again bulged out, to end in a narrowed and constricted anus. The ureters as they entered the bladder appeared small, but the upper two-thirds of both, as well as the pelvis of both kidneys, were dilated. This was obviously a case of early hydronephrosis secondary to a narrowed and constricted urinary outlet. The right suprarenal gland appeared normal, but the left was enlarged to about one-third the size of the kidney.

Sections of the enlarged suprarenal gland were made, and Dr. T. R. Elliott expressed an opinion upon them. He thought the enlargement was entirely confined to accessory cortical cells, and was not of any importance.

The significant feature of this case is that there was stenosis at points in the gastro-intestinal tract other than the pylorus. This would indicate that the influence at work did not emanate from the immediate vicinity of any one of these points, and that the spasm producing the stenosis must have been the result of some general physiological disturbance affecting all the orifices. The only influence we know of from experimental investigation which will cause spasm of the above nature is hyper-adrenalism. There was nothing in the appearance of the gland with which these changes could be associated. The gland evidently proceeded along its normal course of involution, leaving only the results of ante-natal hyper-secretion. It is unjustifiable to insist that hyper-adrenalism is the cause of congenital pyloric hypertrophy, because it cannot be proved. There is, however, sufficient evidence to justify one in holding it to be the most reasonable explanation.

Contributory Causes of Spasm.

As has been suggested above, the amount of hypertrophy present at birth is insufficient, except in rare instances, to cause symptoms of obstruction. This is clearly evident from the clinical history of the great majority of cases. But there are certain conditions which will cause spasm after birth sufficient to complete the obstruction in an already stenosed orifice. This combination determines the onset and severity of the symptoms. That some of these cases recover without surgical intervention is due to the fact that the subsidiary conditions are amenable to palliative treatment, and are of greater moment in producing obstruction by added spasm than the congenital stenosis itself. And there is sufficient evidence to justify the opinion that the two chief contributory causes of spasm, phimosis and secretory inhibition, are directly associated with the congenital hypertrophy.

1. *Phimosis.*—The association of phimosis is very interesting. That phimosis in itself may cause spasm we know.

In 1914 there were admitted to Dr. W. S. Colman's ward at Great Ormond-street, three baby boys who showed gastric peristalsis and projectile vomiting. No tumour was palpable, therefore no diagnosis of congenital stenosis was made. They were all markedly phimosed, and circumcision permanently relieved the symptoms in all three.

Moreover, in cases of true congenital stenosis circumcision without any other form of treatment has relieved the symptoms immediately for varying periods of time. Further, an analysis of the last 84 cases admitted at Great Ormond-street showed only 13 girls and not one Jew. This in itself is an observation of marked significance as to the association of phimosis with congenital stenosis of the pylorus. Whether it is an associated condition, or the cause of the added spasm, or both, is difficult to say. Certainly it may be a potent cause of spasm. A large majority of boys in this series of cases showed phimosis of a definite character. There is not, as a rule, a long prepuce with a narrow opening covering a small penis, but a prepuce stretched tightly over the glans of a particularly well-developed penis. In other words, "the penis is too large for the prepuce." Up to the present investigators consider that it is the cortex of the suprarenal gland with which is connected development of the sexual organs. The association of precocious sexual development with malignant hyper-nephromata is in itself significant. It may well be that there is a definite relation between a slow involution of the suprarenal gland and phimosis of this particular type. The way in which phimosis may produce pyloric spasm has been shown by Tyrrell Gray and Parsons, and will be referred to more fully in the joint paper which follows this article.

2. *Secretory inhibition.*—The most important factor in producing added spasm at the pyloric orifice is a secretory disturbance directly attributable to the obstruction. Under normal conditions the acid content of the stomach, passing through the pylorus and over the duodenal mucous membrane, stimulates the formation of secretin. This is absorbed into the blood and is carried to the pancreas, stimulating the formation of the external secretion of this gland. This phenomenon had been investigated by many physiologists, and the correctness of the observation was finally demonstrated by Bayliss and Starling. They also determined that the amount of pancreatic secretion exhibited varied directly with the amount of acid chyme passing through the pylorus. Normally, acid chyme in the stomach opens the pylorus and in the duodenum closes it. In the absence of a sufficient supply of the alkaline pancreatic secretion, the acid chyme is much longer being neutralised. During this time the pylorus remains closed. Given an already stenosed orifice, there is, in the absence of any other cause, a diminished supply of pancreatic secretion. This very lack in secretion will keep the orifice closed, with still less room for stomach contents to escape, and thus still less pancreatic secretion. In this way a vicious circle is set up which effectively obstructs the already narrow stomach outlet. There are several reasons for thinking that there is pancreatic insufficiency. Even under ordinary circumstances clinicians know that babies cannot digest the more complex forms of starches. From this one deduces diminution or absence of certain starch-splitting ferments in the pancreatic secretion. Again, it is a noteworthy fact that babies with congenital pyloric stenosis do better on a diet of pancreatinised milk than on any other food. Moreover, after relief from obstruction either by palliative or by surgical treatment, the child, though fed on peptonised milk, has loose, frequent, greasy stools for several days. This has been noted by several observers, and Still has pointed out the grave danger of "diarrhœa," in the early post-operative period, in those cases where surgical intervention became necessary. These loose, frequent, greasy stools are not the result of any inflammatory charge in the mucosa, but are due to the presence of incompletely digested fats. Still has also noted in these cases that babies tolerate fats in their diet very badly. Even when the obstruction is relieved the child will still do better on a diet of peptonised milk low in fats for the first couple of weeks. The reason suggests itself. A gland like the pancreas, whose function has been inhibited for any length of time by pyloric obstruction, will not resume its maximum function the moment the obstruction is relieved, but will take a corresponding length of time before it secretes sufficient ferments to digest the proteids and fats. Then, again, the small, hard, dry stool so characteristic in these cases is due as much to the lack of secretions as to the small quantity of food passing through the pylorus. Thus there is clinical evidence to show that there is pancreatic insufficiency in cases of congenital stenosis. Add to this the evidence of Sharpey Schafer that the suprarenal gland is antagonistic to the pancreas, and it would seem that hyper-adrenalism, relative or absolute, would inhibit pancreatic secretion. There is then good reason for justifying the assumption of pancreatic insufficiency, which we know is a powerful factor in producing pyloric spasm. Given hyper-adrenalism, there is at once sufficient cause for the primary hypertrophy induced by spasm and for the perpetuation or reinduction of this spasm by pancreatic insufficiency.

Effect of Changes in the Stomach.

Nothing has been mentioned about the effect on the stenosed pyloric orifice of changes in the stomach itself. Any local irritative conditions or inflammatory changes will, of course, produce swelling of the mucosa. In many of the cases, perhaps all, there is some change of the nature produced by the undue retention, and thus fermentation, of

food. Ordinarily these changes would not cause obstruction, but added to congenital pyloric stenosis, they hasten the formation of the vicious circle, and the perpetuation of the obstruction is due to the more rapid secretory arrest. It is also likely that phimosis, while in itself an important cause of spasm, hastens the appearance of symptoms of obstruction in the same way.

Relation to Treatment.

The recognition of these phenomena has a most important bearing upon treatment, palliative or surgical. In my joint paper with Mr. H. Tyrrell Gray we have studied the application of this theory to the treatment and indications for operation. The results obtained and the observations we have been able to make justify one in thinking that this theory of the pathogenesis of congenital pyloric stenosis as outlined above is based on sound deductions.

Importance of Internal Secreting Glands in the Study of Diseases of Children.

The experimental evidence available shows that only one condition will produce spasm of unstriped muscle, and that is hyper-adrenalism. An effort has been made to present to the profession the application of this condition—the result of an ante-natal lack of balance between the internal secretory glands—to the pathogenesis of congenital hypertrophic pyloric stenosis. This study, of course, opens up a very wide field for investigation. If hyper-adrenalism may exist, why not hypo-adrenalism? One may yet have to reconsider the ætiology of the whole question of intestinal stasis from this point of view. Again, Rachford has reported the post-mortem examinations of six children who died from pyloric stenosis where no possible cause of death could be found other than an abnormally large thymus gland. Experimental physiologists have shown that in extirpation of the thyroid gland hypertrophy of the thymus ensues. The thyroid secretion is antagonised by the suprarenal secretion. How far may one go in one's deduction? This fact is clear, we must not study children as young adults. Their physiology is entirely different, and their symptoms should not be measured by similar symptoms in adults. Many of the problems they exhibit must be studied from the developmental point of view, and in this connexion none of their organs are more important, or so easily upset by faulty interaction during the course of their development and involution, than the internal secreting glands.

CONGENITAL HYPERTROPHIC STENOSIS OF THE PYLORUS:

ITS DIAGNOSIS AND TREATMENT.

A CLINICAL STUDY.

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I.—*Diagnosis.*

There are very few diseases of infants in which opinions as to the diagnosis and treatment differ so widely as in congenital hypertrophic stenosis of the pylorus. The mortality is generally so high, indeed so amazingly high, in undoubted cases, that it has led the writers to make a special joint study of this condition for the past few years. One of the first conclusions to which we have been led is that the unsatisfactory results obtained from various lines of treatment advocated are largely to be attributed to the fact that such treatment has been empirical rather than based on a full appreciation of the ætiology; while the extraordinary variability of the figures published by competent authorities is explained by the difficulty of certain diagnosis in doubtful cases, and therefore by the different standards adopted in establishing such a diagnosis in any given case. Thus some observers do not consider the presence or absence of a palpable tumour an important point in diagnosis, though we place this first and foremost as the most important diagnostic feature.

It must be clear, we think, that the repudiation of such an important point must of necessity lead, in any series, to the inclusion among true and undoubted cases of congenital hypertrophic stenosis of mild or doubtful ones; or even of cases which only resemble the condition under discussion in their clinical manifestations and do not really come into the same category. Such figures are not only useless but misleading. The first point, therefore, to be made quite clear in such a study is the clinical picture on which the diagnosis of congenital hypertrophic stenosis is based. The signs and symptoms upon which such a diagnosis is to be founded are: 1. The presence of a palpable tumour in the region of the pylorus. 2. Visible gastric peristalsis. 3. Projectile vomiting. Associated with these are nearly always varying degrees of: 4. Constipation. 5. Phimosis. As the symptoms in the great majority of cases first appear at a fairly constant period in the child's life some consideration in making a diagnosis must be given to: 6. The age of onset. The general appearance of the child in long-standing cases is characteristic of marasmic children whatever the cause of wasting, and will not be discussed.

1. *A palpable pyloric tumour.*—First in importance in making a diagnosis of true congenital hypertrophic pyloric stenosis is the detection of the tumour. It is the *one* certain sign. Failure to find the tumour must always leave the diagnosis in grave doubt. It is said that it cannot be demonstrated in every case, but we believe that repeated examinations, with the child under favourable conditions, should reveal its presence. It is usually found just outside the outer border of the right rectus muscle in the transpyloric plane. Deep palpation is necessary as it may lie well back, often tucked in beside the vertebræ. Occasionally it is higher, when care must be exercised to exclude Riedl's or an enlarged quadrate lobe of the liver. Sometimes also it is situated lower in the abdomen, in cases where there is extreme gastric dilatation. Often a clue to its situation may be obtained by locating the right limit of the peristaltic waves. When found it gives a very characteristic sensation; it feels like a marble which rolls away from the examining finger as it is touched. Examination of the tumour in the operating and post-mortem rooms has shown that there is considerable variation in its size and appearance. The majority, however, fall into two groups:

(1) *A large hard avascular type.*—At operation this kind appears as a hard, smooth, glistening, oval or cylindrical, white, and almost bloodless, swelling about the size of a large acorn.

(2) *A small hard vascular type.*—In this instance the size is less than the preceding; there are more blood-vessels evident, but otherwise it presents almost the same appearance. This variation in size sometimes accounts for the difficulty in finding it, the smaller ones naturally presenting the greater difficulty. Other reasons for missing it may be:

(*a*) *Dilatation of the stomach.*—In this case the dilated stomach overlaps the pylorus and makes its detection impossible until the dilatation has been somewhat relieved by palliative treatment.

(*b*) There is often difficulty in getting the examining finger behind the lower border of the liver and in palpating deeply enough.

(*c*) *The age of the child.*—In older children of 2 or 3 months the better-developed abdominal muscles increase the difficulty of palpation. Moreover, the coils of intestine are somewhat distended, as they have been functioning longer.

The most favourable time for examination is while the child is being fed. The food when it reaches the stomach drags on the fundus and uncovers the pylorus. Moreover, the peristalsis induced by the presence of food in the stomach makes it more apparent. Sometimes it is necessary to postpone the examination until after repeated lavage, when the dilatation is sufficiently relieved to permit of easier palpation. Where difficulty with the liver or a deeply-placed pylorus is encountered it is a good plan to turn the baby on its face, allowing the slightly flexed body to rest on the palm of the hand. In this position the abdominal walls are more relaxed, and the child cannot resist examination as much. The viscera fall forward, and the fingers can be more easily pressed behind the liver and explore the whole region. The examination should always be made with the thoroughly warmed left hand from the left side of the patient.

2. *Visible gastric peristalsis.*—This is evidence that the tumour, palpated as above, is sufficient to cause a marked degree of obstruction at the outlet of the stomach. By itself it is not of paramount importance. In Case 14 no peristalsis was seen until the child was on the operating table under deep anæsthesia, although it was believed that the tumour had previously been palpated. On the other hand, pure spasm without congenital hypertrophy may cause gastric peristalsis and projectile vomiting. The following case illustrates the point:—

A boy (Case 18), age nine weeks, was admitted to the hospital. Visible gastric peristalsis and projectile vomiting were demonstrated, and the child was markedly wasted. There was also a very tight phimosis. No tumour was palpated, therefore no diagnosis of congenital stenosis was made. The only treatment carried out was that of circumcision. Subsequent to this operation there was no more peristalsis seen, nor did the child vomit again. Some 60 hours later he suddenly collapsed and died. Post-mortem examination showed considerable dilatation of the stomach, but no abnormal thickening of the pyloric muscle whatever.

The three cases admitted under Dr. Colman, mentioned in the previous paper (G.R.P.), also show that gastric peristalsis may be visible without congenital stenosis. If this sign is not obvious it can often be elicited by gently stroking the epigastrium or by giving a feed.

3. *Projectile vomiting.*—This symptom is of similar diagnostic importance to visible gastric peristalsis. When characteristic, the food is forcibly ejected across the cot on to the floor, and will also appear streaming from the nostrils. Usually the baby is not otherwise disturbed, and appears quite happy about it. It may occur after every feed, or at infrequent intervals. Sometimes the food is returned before the child has finished suckling, and at other times one or two hours later. The character of the vomits will, of course, depend on how long the food has remained in the stomach, *but it is never bile-stained.* Infrequent vomiting must not always be regarded favourably, because, with increasing dilatation of the stomach, two or more feeds may be retained before the whole is ejected. This will account for the frequent history that the child "vomits more than it takes." The vomiting is not always projectile. Under palliative treatment it may become much less forcible if no less frequent. As has been shown above, it may occur also where there is no congenital stenosis.

These are the three cardinal features to be considered in making a diagnosis. Taken together, their presence will indicate congenital hypertrophic stenosis with a high degree of obstruction. Taken separately, the first only is of paramount importance. There is sufficient evidence to show that the other two may occur where pylorospasm exists alone. There is a great variation in the published statistics of this condition. Many observers have reported brilliant results in long series of cases under medical treatment. From the above conclusions we consider that, in many such instances, the diagnosis has been made on entirely insufficient grounds, and that the number of cases of true congenital pyloric stenosis is but a fraction of those reported. A positive diagnosis may never be made without finding the pyloric tumour.

4. *Constipation.*—This is usually marked. In typical instances the motions are small, hard, and infrequent. Its relation to the primary condition is evident. If very little food passes the pylorus there will remain even less to be evacuated. Reference has been made in the previous paper to the associated secretory inhibition. This lack of secretion explains the hard consistence of the stool. The diagnostic importance rests on the fact that the size of the stool will, in a measure, indicate the degree of obstruction at the outlet of the stomach, while its consistence will indicate the degree of secretory inhibition.

5. *Phimosis.*—In males phimosis, or an adherent prepuce, is constantly associated with congenital pyloric stenosis. Its frequency, character, and possible relation to the primary condition have been dealt with in the previous paper. That marked phimosis may be sufficient to produce pylorospasm reflexly is evident from the cases reported above and subsequently.

It has been shown[1] how definitely a powerful afferent stimulus, in its efferent response, not only involves the sympathetic system as a whole, but does so particularly in the splanchnic system, and that such an efferent response in the splanchnic system not only involves the vascular distribution of the sympathetic, but also its intestinal muscular supply. Thus, it was pointed out that a reflex, acting both through the higher centres and also through the segments involved, might induce a powerful stimulus resulting in an inhibition of the intestinal muscle. The sphincters in the intestinal tract, however (i.e., pyloric and ileo-cæcal), appear to have an inverse innervation, so that a stimulus which inhibits the bowel musculature causes a contraction of the sphincters. The powerful afferent stimulus arising from the prepuce is well known, and it is not difficult to appreciate that the constant series of small stimuli arising from the prepuce in a subject of phimosis may well induce, in this way, a spasm of the pylorus. It is possible that such a spasm may arise either from direct nerve stimulation or from excessive stimulation of the suprarenal hormone, or from both of these.

6. *Age of onset.*—The age at which these babies are usually brought for advice is from four to eight weeks. We are then told that the vomiting and wasting have gone on for from one to five weeks. So that the symptoms, in the great majority of cases, appear about the third week. Occasionally one does not see the child until, perhaps, the third month, and true cases have been reported as showing symptoms from the third month only. These cases are sometimes not easy to diagnose because of the difficulties in physical examination mentioned above.

On rare occasions examination under an anæsthetic may be necessary before a diagnosis can be made.

A history of projectile vomiting beginning about the third week, which is unrelieved by the ordinary methods of treatment, is highly suggestive, and should lead to a detailed examination in respect of the above signs and symptoms. Then an opinion can be formed as to whether the condition is one of pylorospasm or congenital hypertrophic pyloric stenosis.

II.—*Sex Incidence.*

It is a remarkable fact that all published statistics show a very large preponderance of boys. In the series we quote, of 84 cases, there were only 13 girls. The male, being vago-tonic, might be expected to show spasm sufficient to cause hypertrophy more often than the sympathetico-tonic female. But this cannot account for the total difference. Certainly girls do suffer from congenital stenosis, but we are able to show their behaviour to be different. They are slower developing the characteristic symptoms of obstruction, and therefore usually come under observation at a somewhat later age. (Vide Cases 4, 14, and 15.) That they will also show a correspondingly slower recovery than boys is particularly well illustrated by Cases 14 and 15. These cases will be referred to again in more detail, when these factors will be emphasised.

As has been stated previously, thickening of the pylorus has been noted in many post-mortem examinations of children, both male and female, who showed no symptoms of obstruction during life. It was also shown that the incidence of these symptoms depended upon the relationship existing between the degree of congenital hypertrophy and the severity of the added spasm. In girls the more urgent cause of spasm—phimosis—does not exist.

We are thus led to believe that many children, boys and girls, are born with some degree of pyloric hypertrophy who never develop pyloric obstruction. And we conclude that the sex difference is more apparent than real. That is to say, apart from the slight excess in the number of males, possibly due to their vago-tonicity, the sex incidence is about equal.

It would be interesting to know the relative number of boys and girls in Jewish children who develop pyloric obstruction. Our deductions from the present study would lead us to expect that, in Jewish subjects of pyloric hypertrophy, clinical symptoms of obstruction would be manifested in as many girls as boys. Further, that progress would be identical in both sexes under palliative or operative treatment.

III.—*Operative Treatment.*

Criticism of operative procedures.—In estimating at their value the effects of different forms of treatment in a particular disease there are several factors which are essential to a sound judgment. Foremost amongst these is the necessity for every case to be studied under conditions of

[1] Tyrrell Gray and Parsons, Arris and Gale Lectures, Roy. Coll. Surg., 1912.

medical attention, after treatment, nursing, housing, temperature, &c., as nearly constant as possible. Only under such conditions can the vitiation of results by outside influences be excluded, and the intrinsic value of any operation be accurately estimated. For this reason the value of this study would be much diminished if it included cases seen in a number of other hospitals as well as in private practice, since such a lack of uniformity would prejudice the value of observations intended to support or disprove a definite hypothesis. It is well known that, up to the present, the results of surgical treatment of congenital hypertrophic stenosis are markedly inferior in hospital to private practice, whatever operation may be performed. Thus we can record successes both with Loreta's operation (divulsion), and with gastro-enterostomy in apparently hopeless cases, in private practice, when undivided individual attention and every possible facility were available. But at Great Ormond-street, up to April, 1918, when we first initiated the Rammstedt operation as a routine procedure, there had never been a single instance of recovery after surgical intervention. A second feature of importance in ascertaining the best surgical procedure, and the indications for its adoption, is that different methods should be given a trial by the same surgeon; for the fact that one surgeon obtains the best results with one particular operation, while another similarly perfects himself by practice with a different one, from which he deduces his figures, is of limited value in helping the profession to judge which method is to be generally adopted as the most hopeful. In order, therefore, to arrive at impartial results we have practised for the last few years three kinds of operation: (1) gastro-enterostomy, (2) Loreta's operation, (3) Rammstedt's operation. It is feared that the number of cases available is not large, because surgical results have been so unsatisfactory that it has been difficult to get physicians to allow cases to be operated upon; while, on other occasions, when the surgeon has been called in, their condition has been such that surgery has rarely been afforded a fair trial.

However, since the same disadvantages obtained when the operation of Rammstedt was first practised, the comparison of results in these three procedures is tolerably fair. The first point of importance, then, is the decision as to which variety of operation is the best and based on the soundest principles.

Pyloroplasty will not be discussed, because, though it may be possible to do this operation successfully in a limited number of cases, it is only necessary to see and feel some of the hard, almost cartilaginous, tumours so often met with, to appreciate the fact that the adoption of any plastic method is impossible with any degree of certainty or security.

The operation of Loreta, though it has been attended with such a great measure of success in the hands of Mr. F. F. Burghard, has disadvantages which cannot be ignored. In the *first* place, this procedure is unsound in principle because it lacks precision. Thus the object is to rupture the hypertrophied and spastic circular fibres without damage to the mucous membrane, and, if possible, without rupturing the peritoneal coat. That this object is attained only by violent measures is true, however carefully and slowly the dilators are introduced, and whatever length of time is allowed to elapse while each dilator rests in the pylorus before the next size is employed. *Secondly*, it is not always a simple matter to gauge the exact amount of dilatation required to rupture the muscular coat, though, when rupture has occurred, the gap can usually be felt with the fingers of the left hand as they grasp the pylorus during these manipulations. It is easy to avoid damage to the mucous membrane; indeed, with the most ordinary precautions, it is impossible to do harm in this way. There is no certainty at any time that the peritoneum will not split when the muscular coat gives way, for it is so thin, friable, and adherent to the tumour that, in many instances, the rupture of both may take place simultaneously. *Thirdly*, this very lack of precision leads to overstretching or to insufficient stretching, leaving to the surgeon's instinct and experience alone the estimation of the amount required. Recurrences of obstruction in the latter eventuality are to be expected. In the absence of full statistics no estimate of the percentage of recurrences can be given, but it does undoubtedly occur. *Fourthly*, such an operation on an obstructed stomach is more liable to be a septic one on account of the retained contents and consequent changes in the gastric mucosa, since the stomach has to be opened in order to introduce dilators; and a certain amount of infection, however mild, must add to the severity of the operation in so small a subject, in spite of every care to avoid soiling. *Fifthly*, the operation cannot be performed carefully and gently in less than 15 minutes, most of the time being consumed in allowing each dilator to rest a short time in the pylorus as larger sizes are used. Such a length of time in an operation of violence on a young subject, together with the addition of the necessary sepsis entailed by opening the stomach, combine to make the operation a severe one. *Sixthly*, the exact site of the rupture can never be predicted with certainty.

It follows naturally that Loreta's operation is only available for early cases, when the nature of the condition is established soon after the onset of symptoms, and before the baby is markedly wasted. In later cases, when the subject is wizened and marantic, or almost moribund from loss of fluid, this operation is doomed to failure and cannot be advocated generally as a means of saving life. Now we submit that any operation of the severity and risk entailed in the surgical treatment of so dangerous a condition should, if the immediate operation risks are survived, at least be one that offers a certain cure with no risk of recurrence. This cannot be claimed, we believe, from Loreta's operation. Further, it must be practised on early cases of fair physique to offer a reasonable chance of success. If this principle be adopted as a routine, we believe that, though a definite proportion of cases will be operated upon successfully, in accordance with ordinary surgical risks, even favourable cases will sometimes succumb to Loreta's operation. Amongst these will be numbered a certain proportion who would have recovered by palliative measures alone. For these reasons we are of opinion that the ideal operation to be advocated generally is one which offers the chance of a certain cure, while being applicable to cases in which palliative treatment has been given a trial and failed. It is from this standpoint that we have made a study of congenital pyloric stenosis. In following this study we would ask our readers to bear in mind that, in every instance, operations have been performed only on infants with whom palliative measures had definitely failed and the child was losing ground. In no instances have operations been performed without giving such preliminary measures a fair chance. Further, we emphasise the fact that, had we been aiming at good statistics alone, many cases would not have been operated upon; and still further, that in no single instance has operation been declined owing to the feebleness of the subject. As a result life has been saved on more than one occasion in an apparently hopeless case, though naturally our actual figures suffer.

(1) *Gastro-enterostomy.*—The obvious drawbacks in Loreta's operation led us to try gastro-enterostomy as an alternative method. Successful gastro-enterostomy has, at least, the merit of certain cure. This operation was attended in the past with such a high mortality that, by common consent, it had been abandoned as a routine method. But we wished to try this method under spinal anæsthesia. The number of cases is too small to allow of statistical deductions, but the reasons for the abandonment of this procedure are of importance. Briefly, gastro-enterostomy has been performed on four cases; three were operated upon under spinal anæsthesia and one under warm ether anæsthesia. The posterior no-loop operation was performed on all the cases. Two were operated on at Great Ormond-street and both died within 48 hours. Two were operated on elsewhere and both recovered. One of these, in excellent condition, with no adverse symptoms after the operation, developed a fatal pneumococcal meningitis, by extension from the middle ear, about a fortnight later. The other was alive and well some few months ago, three and a half years after operation. There can be no doubt that spinal anæsthesia improves the outlook from this operation, which can be performed easily and securely in a total time of 15–20 minutes. With figures showing 50 per cent. recoveries in all cases, it might appear that there was no justification for abandoning this procedure. The figures, however, do not represent the whole case, and the reasons for discarding gastro-enterostomy are as follows.

The two most favourable cases were those at Great Ormond-street, where everything appeared in favour of recovery, yet both died. Of the two babies who recovered, one appeared practically moribund, the other seemed

hopelessly wasted and feeble; both owe their recovery to the most constant devotion and attention of doctor and nurse, and even so their condition was quite critical for some days. Again, though the operation can be quietly and gently performed under favourable conditions in 15 minutes, this end will only be attained by perfect team work between anæsthetist, sister, assistant, and surgeon, and allows no margin for surgical accidents, small delays, &c., and the hundred-and-one small events which contribute towards, or militate against, a smooth and rapid operation. Finally, even when everything has gone perfectly, without a hitch, the child's condition immediately afterwards is always bound to be critical; while, in the presence of any adverse circumstances, a fatal result is almost sure. It was concluded, therefore, that though many recoveries might be obtained with gastro-enterostomy, even in late cases, there would always be too great an element of "luck," and the prognosis must always be too doubtful to justify its routine adoption. There is another point which deserves mention. It has been shown in a post-mortem performed on one of these cases many months after gastro-enterostomy (death had occurred from other causes) that, though symptoms are definitely cured and the child is apparently normal in every respect, the pyloric tumour remains. In other words, gastro-enterostomy does not cure the congenital hypertrophy of the pylorus, but only short-circuits the site of obstruction. (Vide Rammstedt's operation (3).) Finally, since the aim of any operation should be, if possible, directed primarily at the cause of the evil, we trust that our study will show that gastro-enterostomy is a measure which aims only at circumventing the gastric obstruction, and does not attack the origin of such obstruction. It is a little difficult to account for the inferior immediate results obtained by gastro-enterostomy compared with those following Loreta's operation, for the time taken by this operation is no longer (indeed, it is often shorter); while the operation itself is of a gentler nature involving less manipulation. Nevertheless, it seemed clear that, in spite of the apparent certainty of cure, gastro-enterostomy ought to be abandoned as a routine method. Loreta's operation was therefore reverted to in cases where palliative treatment had definitely failed.

(2) *Loreta's operation.*—This operation has been performed on four occasions at Great Ormond-street; all were fatal. We record a total of 7 cases with one recovery. In all cases a feed was introduced into the duodenum as recommended by Mr. Burghard. The first two cases were operated upon under spinal anæsthesia, one male and one female; both were 6 weeks old; both died. In one of them the child did well for 11 days and gained 4 ounces in weight, and then commenced to go downhill and began to vomit. Subsequent to operation visible peristalsis was never seen. In the other case no cause of death is stated in the notes; but it may be stated that spinal anæsthesia was abandoned in these very wasted and feeble infants, owing to the frequency of massive collapse of the lungs to which there is a great liability. Of the other two infants who died after Loreta's operation, one is of special interest.

The child was a male of 4 months, in whom vomiting commenced at 2½ months. It was a weakly infant of 6½ lb. Loreta's operation was performed under open ether anæsthesia and lasted under 15 minutes. The muscular coat was ruptured by a No. 10 Hegar's dilator, which was left in situ for a few seconds. The pulse remained excellent throughout, but breathing became spasmodic during the dilatation, and continued so for some time after returning to the ward. There was an occasional vomit during the first few days, but the child's condition improved for the first 13 days, with a gratifying gain in weight. (Chart 1.) Diarrhœa and vomiting supervened, and though this was controlled at times the child gradually sank and died one month after the operation.

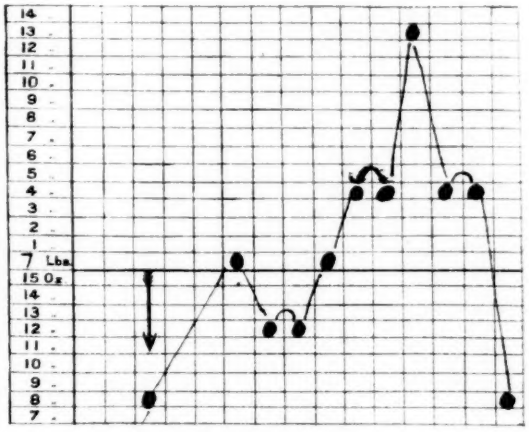
The two features to be noted in connexion with this case are:

(*a*) The spasmodic breathing inaugurated by the dilatation of the pylorus. (*b*) The occurrence of vomiting after the operation.

(*a*) The first of these two has been noted by us on several occasions during Loreta's operation, and is attributable, we think, to a violent afferent vagus stimulus initiated by the violent stretching (and persisting for some time afterwards), which inhibits inspiration in much the same way as a "blow in the wind."

(*b*) The occurrence of vomiting after Loreta's operation was noted in all three cases which recovered from the operation. Four cases definitely died from the operation, while two died within a month, as already detailed. One case recovered and is alive to-day. In the last three cases vomiting was noted after operation; it was not forcible in character, and visible peristalsis was not present. This feature is, we think, to be explained by the fact that, though the circular muscular coat is completely ruptured by the

CHART 1.



The arrow indicates the day of operation.

passage of the dilators, this manipulation induces a swelling and hyperæmia of the mucosa which partially closes the pylorus until this new factor subsides. It is not due to insufficient dilatation, for in each case the split in the muscle was definitely felt, and there were no signs of gastric obstruction such as could be observed before operation, while the vomiting was in no instance of a projectile character. We have, of course, too few cases to allow us to say how often this feature is to be noted after Loreta's operation; but, in view of our small experience, we should expect it to be fairly common.

The one case which recovered was of considerable interest in that it was due to this experience that Loreta's was abandoned in favour of Rammstedt's operation. In this case, during the final dilatation, the muscular and peritoneal coats were both split over a distance of about half an inch. The gap was closed by a catgut stitch, since any attempt at invagination was out of the question, owing to the hard and cartilaginous nature of the tumour. Contrary to expectation, the child made a good recovery, and it was this fact which overcame a natural disinclination to divide these two coats of the pylorus deliberately from the outside and leave them open with the mucous membrane exposed.

(3) *Rammstedt's operation.*—This operation aims at the relief of the pyloric obstruction without at any time opening the gastric mucous membrane. This procedure seems to have been adopted with success by Rammstedt, whose name is attached to the operation, in 1913. The credit, however, for devising a method of relieving the obstruction without opening the gastric mucosa must, we think, be given to an Englishman, Mr. Russell Coombe, of Exeter. This surgeon published a recovery in 1911 (Annals of Surgery) by an extra-mucous pyloroplasty, and in the same paper suggested a modification (which has since been practised with success) designed to facilitate the introduction of the necessary sutures. Rammstedt's operation surpasses in speed, simplicity, and certainty every other operation for the relief of hypertrophic pyloric stenosis, by eliminating every unessential detail. The essential principle of the operation is the recognition of the fact that the mucous membrane of the pylorus is sufficiently thick and redundant to provide by itself adequate protection for the peritoneum against leakage and infection from the gastric contents. The realisation of this all-important fact naturally suggests the simplest of all measures for the relief of the obstruction—namely, the longitudinal division of the hypertrophied

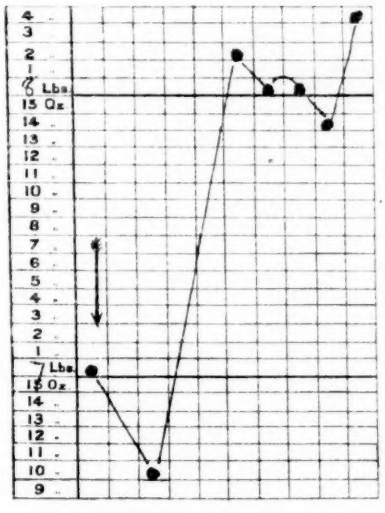
pylorus down to mucous membrane; this constitutes Rammstedt's operation. It might appear that such a simple operation offers, in its actual performance, little for the surgeon to learn; but experience has shown that this is not the case, and this study will serve a more useful purpose if we briefly describe some of the points of interest in the cases on which this operation has been performed. We have performed Rammstedt's operation on 17 occasions at Great Ormond-street, with seven deaths and ten recoveries, giving a mortality of 41·1 per cent. Two facts must be noted:—

1. Pre- and post-operative treatment has been practically identical in all cases.

2. In no instance have we declined operation on account of the bad condition of the patient, whatever the reason. In other words, every case, without exception, when palliative measures definitely failed, was afforded the chance of a cure by operation.

CASE 1.—M. Age 9 weeks. Symptoms present for four weeks. The child rapidly went downhill, and vomiting increased until at the time of admission the description is that of a very wasted baby, with drawn face, lying with eyes and mouth half open, fontanelle depressed, presenting classical symptoms and signs of hypertrophic pyloric stenosis. In spite of infusion, the child when first seen was grey and semi-conscious, with slow intermittent gasping respirations, for which it was placed in a mustard bath. Operation was temporarily declined unless improvement took place with subcutaneous infusion of saline and 2 per cent. glucose. This was continued for 36 hours, when it was considered that operation offered a faint chance of recovery. As it was thought that any of the more recognised operations offered little hope of success, Rammstedt's operation was performed for the first time. At the first incision the skin and subcutaneous tissues were œdematous with saline which oozed as if a local anæsthethic had been given, while, on opening the peritoneum, fluid poured out as in a case of ascites. The pylorus was brought up into the wound and an incision rapidly made through the hypertrophied area through all coats down to the mucosa. The pylorus was then returned to the abdominal cavity and the wound closed in layers. Temperature rose to 105° F. the same evening, but commenced to fall rapidly the following day. This child, though apparently quite a hopeless case, made an uninterrupted recovery. There was no post-operative vomiting. Loose motions were noted for a short time after operation. (Chart 2.)

CHART 2.

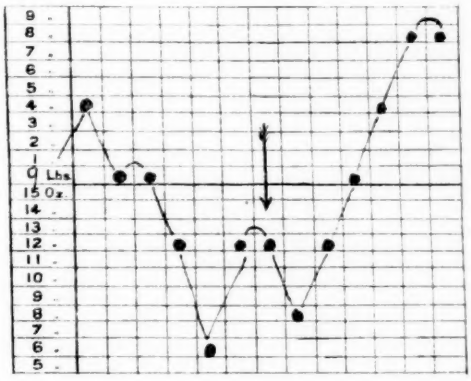


The arrow indicates the day of operation.

CASE 2.—M. Age 8 weeks. Symptoms started at 3 weeks. This case was booked for operation on the same afternoon as Case 1. Loreta's operation had been contemplated, but the simplicity and rapidity of the Rammstedt was so inviting that it was performed on this case also. In spite of the fact that medical treatment had been persisted in for over three weeks, with no relief of projectile vomits, the condition of the child was much better than in Case 1. The temperature rose to 104° the evening of the operation, falling to 100° the following day. Recovery was uninterrupted and there was a small vomit on the ninth and another on the tenth day after operation. Loose motions were noted occasionally for the first 11 days.

CASE 3.—M. Age 8 weeks. Symptoms commenced at 5 weeks. Medical treatment for a fortnight, when vomiting became more frequent and 14 oz. in weight had been lost. Incidentally the temperature rose to 102° on the seventh day,

CHART 3.



The arrow indicates the day of operation.

or a week previous to operation. Rammstedt's operation was followed by an uninterrupted recovery. Temperature rose to 105° on the evening after operation. There was one vomit on the second day. Stools were formed on the tenth day, when there were seven loose motions, which improved with a rectal wash-out, and a steady gain in weight supervened. (Chart 3.)

CASE 4.—F. Age 8 weeks. Symptoms commenced at 5 weeks. Rammstedt's operation performed the day after admission. Uninterrupted recovery. The points to note in this case are the frequency of stools the two days before operation and the absence of "diarrhœa" after operation. This observation has a bearing on the different behaviour of girls, to which reference is made later. Post-operative temperature only rose to 101·4°, but it is worthy of remark that in this case the pre-operative temperature showed a variation of 97° to 98·8°. (Vide Case 3.)

CASE 5.—M. Age 8 weeks. Symptoms started at 5 weeks. Baby wasted and had lost much fluid; skin loose and inelastic. Rammstedt's operation was well borne and recovered from, and feeds were well taken. Gastric lavage the evening after operation showed a quantity of undigested milk and mucus. Forty-eight hours after operation the child developed some abdominal pain, and died suddenly an hour later. Post-mortem examination showed that the incision into the hypertrophied part of the pylorus had not been continued sufficiently far on the stomach side—in other words, the incision had been deep enough to sever all coats down to the mucosa, but had not completely divided all the hypertrophied portion in the most important situation. The lesson to be learned from this case, therefore, was that the hypertrophied portion must be divided throughout its whole length down to the mucous membrane. This seemed to be essential to the complete relief of the gastric obstruction; for, though the child was in good condition after the operation, the presence of mucus and undigested milk in the stomach shows that the obstruction was not completely relieved.

CASE 6.—M. Age 6 weeks. Symptoms dated from first week, becoming typical at 3 weeks, and culminating in frequent projectile vomits. Rammstedt's operation performed two days after admission, during which time the temperature varied from 97·4° to 99° and 101°. Recovery was uninterrupted and there was no vomiting. The temperature rose to 104° on the evening of operation, and to 105° on the following day, falling to normal three days later. "Diarrhœa" was noted on the second day. Steady gain in weight was noted from the fifteenth day.

CASE 7.—M. Age 6 weeks. Premature baby born at 7½ months and weighing 5½ lb. Child very feeble and weak. Symptoms dated from nine days ago, and were severe in character. Medical treatment for 17 days with no improvement. Rammstedt's operation was followed by death the same evening.

CASE 8.—This case is of special interest in view of the lesson learnt from a study of the result. M. Age 5 weeks. In good condition. Medical treatment for five days yielded no improvement in the vomiting, while the child steadily lost ground. Rammstedt's operation was performed on the seventh day after admission. The temperature rose to 102·8° on the day following operation, and showed from that time the usual steady fall up to the third morning. On the third afternoon the temperature rose again to 102°, and was accompanied by five vomits. Subsequent to this diarrhœa and rapid respirations developed; the temperature rose to 104°, and the child died at midnight, or nearly four days after operation.

Commentary.—Now the interest in, and instruction from, this case lie in the following facts: In Case 5 the obstruction was insufficiently relieved owing to the imperfect division of the pylorus on the stomach side. In the subsequent cases, therefore, special efforts were made to ensure that the division should be complete; and in this case (Case 8) the incision was carried too far down towards the first part of the duodenum. The mucous membrane was punctured at the lowest part of the incision, and had to be closed by sutures. The child did well for three days, when leakage occurred and was followed by death. Post-mortem examination showed that leakage and peritonitis were the cause of death. (At this point in our experience the same incident occurred in private practice. Fortunately, however, in this case the wound in the mucosa was more securely closed, no leakage occurred, and the child recovered.)

Lessons Learned from Cases.

The lessons we learned from these cases were as follows:—

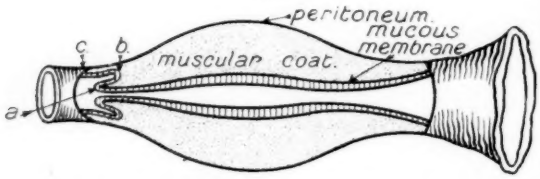
1. The mucous membrane beneath the hypertrophied pylorus is not only redundant, but is also very thick, and loosely connected with the muscular coat. It is this anatomical fact which renders it so easy to divide the two external coats without damaging the mucous coat over the obviously hypertrophied portion. The mucous membrane under the muscular coat of the stomach immediately adjoining the hypertrophied pylorus is also loosely attached; and it is easy, therefore, to divide well into normal stomach wall without fear of injury to the mucosa or of subsequent leakage. On the duodenal side, however, the mucosa is not only very thin, but it is firmly attached to the muscular coat, so that any prolongation of the incision below the hypertrophied portion is almost certain to wound the normal mucosa of the first part of the duodenum.

2. We also learned that the hypertrophy ends abruptly on the duodenal side in a peculiar manner, but on the gastric side it merges gently into the normal structures.

The peculiar configuration of the hypertrophied pylorus in the duodenal portion is of the highest importance. Thus, there are three features to be noted by the operator.

(1) The mucous membrane is firmly adherent to, and very thin and friable over, the terminal hypertrophied muscular coat at *a*. (Fig. 1.)

FIG. 1.



(2) This terminal hypertrophy projects into the lumen of the duodenum, and the adherent mucous membrane bends back with it towards the stomach to join the normal duodenal wall, where it is also firmly attached at *b*.

(3) It is clear that to divide the hypertrophy completely on the duodenal side as far as *a*, the incision must be carried as far as *c*. But it is equally evident that this cannot be done without just traversing the lumen of the duodenum. The impossibility of complete division of the hypertrophied portion of the pylorus by Rammstedt's operation might, at first sight, appear to constitute an important point in favour of Loreta's method; such a conclusion is unjustified. For not only is the final obstruction due to spasm at the gastric end (and not at the duodenal end) of the pylorus, but the thin and elastic duodenal wall in itself allows too much play for mechanical obstruction to occur at this outlet. Thus the hypertrophied distal portion cannot and does not form an element in the obstruction, and there is no need for the division to be carried to its termination. The practical lesson, therefore, was that the incision must be carried well beyond the hypertrophied pylorus on the stomach side where the main responsibility for the obstruction lies; while, on the duodenal side, it does not matter very much if the division is a little incomplete, since the main obstruction is not at this situation. Moreover, in the post-mortem room it can be demonstrated that water can be forced from the duodenum through the hypertrophied pylorus into the stomach, but not in the reverse direction. In subsequent cases, therefore, the stomach side has been given special attention; and the landmark adopted for determining the upper limits of the incision was the point at which (1) the muscular coat becomes thin, (2) the muscular coat becomes vascular. In other words, we now make a point of ensuring that the incision stops exactly at a point where venous oozing commences. On the duodenal side we stop just short of the point where the white avascular coat merges into the normal vascular structures of the duodenum. In all subsequent cases these lessons, learned from disappointing experience, have been faithfully applied. The practical justification of these deductions becomes increasingly evident.

CASE 9.—M. Age 7 weeks. Symptoms commenced at 3 weeks. Medical treatment for five days produced some improvement in symptoms for a day or so, but subsequently the child became rapidly worse. Rammstedt's operation was followed by slow recovery, the delay being attributable to the sloughing of the skin at the site of one of the subcutaneous saline injections. Temperature rose to 104° in the evening of the operation, but fell to 99° the following morning. No vomiting from the day following operation, but "some diarrhœa" was noted for the first ten days.

CASES 10 and 11.—These two cases may be dismissed shortly as offering no basis for study. Both were submitted to Rammstedt's operation, as they were going downhill under medical treatment. Both were operated upon on the same day, during the persistence of influenzal bronchitis. It may be questioned whether these two children were given the best chance of recovery by operating under such adverse conditions, but after careful consideration we decided that the pyloric stenosis was the greater menace and acted accordingly. Had we been considering statistics only we should have refused to operate in both instances. Both cases ended fatally from purulent bronchitis, as evidenced by post-mortem examination, while the abdomen in each instance showed nothing abnormal. We propose, therefore (as we think we are justly entitled to do so), to exclude these two cases from our study.

CASE 12.—M. Age 4 weeks. Symptoms dated from 2 weeks. Medical treatment for eight days resulted in a steady loss of weight of 5 oz. Rammstedt's operation was performed on the eighth day after admission. The temperature rose to 103·4° on the day after operation, when the gradual fall was interrupted by repeated convulsions, cyanosis, and rigidity, ending in death three days after operation. There was no post-operative vomiting, while the child bore the operation excellently, and subsequently took its feeds well. Post-mortem examination revealed nothing abnormal. In fact, this case is one of the only two instances in our series in which a fatal result cannot be explained satisfactorily.

CASE 13.—M. Age 4 weeks. Symptoms dated from 3 weeks. Medical treatment persisted in for eight days without improvement. The child weighed 8 lb. at 3 weeks and 6 lb. 6 oz. at the time of operation. Rammstedt's operation was followed by uninterrupted recovery. Post-operative temperature rose to 105·2°, but fell gradually to normal on the third day. There was no vomiting after the first day.

CASE 14.—This case presented features of unusual interest. F. Age 3 months. Full-time child, weighing 8 lb at birth. Vomits started a few days after birth and gradually got larger, more frequent, and more forcible. Child was admitted to Great Ormond-street at 3 months of age. The abdomen was always distended; the pylorus could never be felt with certainty, and we were never able to see gastric peristalsis. A series of X ray examinations after the taking of bismuth, carried out on two occasions, showed that a small quantity of bismuth escaped through the pylorus soon after it was taken, but that, after this small quantity had passed, the rest remained in the stomach for 48 hours (after which the examination ceased). Vomiting persisted in spite of medical treatment carried out for a month, during which time the child steadily lost ground. In spite of

almost daily infusions of saline and glucose the weight fell from 7 lb. 8 oz. to 6 lb. 4 oz. Rammstedt's operation was performed and was followed by immediate improvement in the symptoms, while a return to the normal and progressive gain of weight was slow and delayed for some weeks, and was characterised by fatty stools for a considerable time. The temperature after operation rose to 105·2° on the second day, falling to normal on the fourth day. There was no frequency of stools and no vomiting subsequent to operation. One point of interest in this case consists in the fact that, though under the most careful and constant supervision for a month previous to operation, the pylorus could never be felt with certainty and we never succeeded in seeing peristalsis, yet directly the child was anæsthetised for operation peristalsis was clearly present to a marked degree.

Effect of Anæsthetic.

We have already suggested that powerful or constantly recurring afferent stimuli evoke an efferent sympathetic response, and have pointed out that the splanchnic nerves share in this phenomenon to a marked extent. The result of such impulses is, therefore, a corresponding stimulation of the splanchnic nerves, with two main results so far as this study is concerned.

(*a*) Direct stimulation to contraction (i.e., spasm) of the pyloric sphincter.

(*b*) A corresponding excess of absorption of suprarenal secretion into the blood, with an accompanying increase in pyloric spasm. The increased contraction of the pylorus is not only accentuated with peristalsis, but such a contracted pylorus is rendered more easily palpable. In this case the stimulus of the anæsthetic, aided by the relaxation of the abdominal walls, seems to be the explanation of this phenomenon. Support is lent to this explanation by the frequency with which early anæsthesia induces visible gastric peristalsis.

CASE 15.—F. Age 11 weeks. Breast-fed, started vomiting at 2 weeks. Brought up to hospital at 4 weeks. Kept on the breast with daily lavage, and, as there was no improvement, supplementary feeds were given. Patient showed a steady but slow loss of weight for eight weeks on medical treatment. Rammstedt's operation performed on admission, pituitrin mxx. being administered previous to operation. Recovery uninterrupted, but progress slow. Temperature rose to 104° after operation, and fell to normal on the third day. No post-operative vomiting and no diarrhœa. This child was in excellent condition before operation and remained so afterwards. The subsequent history of this case is interesting. Peptonised milk was given until the twelfth day, during which time the weight fluctuated round a fairly even figure. Subsequently citrated milk was substituted, with the result that 5 oz. in weight was lost in four days. A steady increase in weight immediately followed the return to feeds of peptonised milk.

CASE 16.—M. Age 6 weeks. Brought to surgical outpatients because of difficulty in passing water, and sickness. Onset sudden at 4 weeks. Projectile vomiting, visible peristalsis, a palpable tumour, and constipation completed the picture; while phimosis (of the type referred to) was well exemplified. Circumcision two days later was followed by a cessation of projectile vomiting, and the passage of copious greasy stools. Loss of weight ceased on the fourth day, and symptoms continued to be relieved until the ninth day, when the recurrence of projectile vomiting demanded radical treatment. Rammstedt's operation was followed by immediate relief of all symptoms, and the passage again of copious fatty stools. There was no post-operative vomiting. Points worthy of comment are:—(1) This was the largest pylorus on which we have ever operated; (2) there was a gain in weight of 11 oz. in the first six days.

These points indicate:—(1) That the infant was born with a pyloric hypertrophy so excessive that the orifice was nearly closed; (2) the deciding factor in the final closure was the added spasm from phimosis which induced a very mild degree of secretory inhibition; (3) circumcision relieved the added spasm to some extent, but not sufficiently to re-establish normal conditions, owing to the excessive hypertrophy.

Briefly, the congenital hypertrophy was the preponderating feature, and therefore the case was only amenable to radical treatment. The fact that secretory inhibition played a small part is evidenced by the immediate post-operative gain in weight.

CASE 17.—M. Age 5 weeks. A very poor, weakly, wasted infant with classical symptoms. Vomiting began about the twenty-fifth day. Phimosis was well marked and of the usual type. Circumcision was followed by no improvement in the symptoms in three days. As the child had no reserve power to draw upon, and added spasm was clearly playing a minor rôle in the obstruction, we did not wait longer, but decided on operation. Rammstedt's operation was followed by immediate relief of vomiting and the passage of the usual loose, fatty stools. The pylorus was exceedingly large. There was no post-operative vomiting after 12 hours, and the child's condition continued to improve daily. Sudden death from unexplained causes on the fifth day surprised everyone. Post-mortem examination of a most detailed character failed to show any cause of death. (Vide Cases 18 and 19.)

In addition to these cases on which Rammstedt's operation was performed, we have selected two cases in which circumcision so completely relieved the obstructive symptoms that they are worthy of note. If we do not report in detail all cases where the results of circumcision might support our contention that phimosis is the most important cause of added spasm, it is only because we do not wish unduly to labour the point.

CASE 18.—A male child, with symptoms of projectile vomiting, constipation, and wasting. Phimosis of the usual type was marked. Visible peristalsis was noted, but no tumour was felt. Circumcision was followed by immediate cessation of vomiting and the passage of copious greasy stools. This amelioration of symptoms continued until sudden death occurred 60 hours later. Post-mortem examination showed no pyloric hypertrophy, and the cause of death is unexplained.

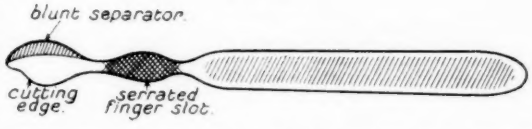
CASE 19.—This is of exceptional interest. A male infant, in whom visible peristalsis and a palpable tumour, added to the characteristic history, established the diagnosis. The usual type of phimosis indicated circumcision, which, with one relapse, gradually, but completely and permanently, relieved vomiting and constipation. Gain in weight commenced on the eighth day, and stools were becoming normal about the eleventh or twelfth day. On the thirteenth day, five loose, green, undigested stools were passed containing mucus. On the fourteenth day 7 oz. in weight were quickly lost, and the baby died quite suddenly.

In this case all the symptoms of pyloric obstruction were relieved by circumcision, and the definite improvement in the stools at about the eleventh or twelfth day (together with the preceding steady gain in weight) supports our experience—i.e., that pancreatic function begins to be re-established about this time after the relief of the pyloric obstruction. It is possible that this child, already weakened by starvation, could not withstand even the slight toxæmia which may have accompanied a mild infective diarrhœa. The stools were normal for the 24 hours preceding death.

Details of Operation Performed.

A study of these 17 cases teaches much in connexion with the actual performance of the operation, and as our experience has shown us that the success of the operation depends in no small measure on apparently insignificant details, the procedure, as we now practise it, should be described. The essence of the operation is its simplicity

FIG. 2.



and rapidity; and this, being the case, there is no necessity for hurry. It can be quietly and comfortably performed with care and deliberation in a minimum of five minutes and a maximum of seven minutes. If everything goes smoothly the latter figure need never be exceeded. A special knife has been made by Messrs. Allen and Hanburys in order to combine rapidity with safety. It is exceedingly simple and consists of semicircular cutting blade on one side with a blunt separator on the other, so designed that there are no sharp points in the cutting part which could inadvertently damage the gut. (Fig. 2.)

This knife is held like a pen, the cutting side being used first, and then the knife turned over and the blunt separator employed for completing the division. The abdomen is opened by an incision about 1½ in. long, about ½ in. below the costal margin, at about the junction of the outer and middle thirds of the right rectus. The incision is continued

through the rectus fascia and the muscle is split. The peritoneum is opened for about 1 in. in length and a pair of artery forceps clipped on it at either extremity. Such an incision usually exposes the liver in about the upper two-thirds of its length. The liver is gently rotated upwards and the stomach wall lifted out of the wound by picking it up with a pair of forceps. The stomach is caught with the finger and thumb of the right hand and lifted gently upwards and to the left. At this point there often may be experienced a little difficulty in presenting the pylorus in the wound. We have observed that any degree of traction influences (sometimes to a marked extent) the respirations, and so the child's general condition. In order, therefore, to avoid traction we find that the best manœuvre is to hold the stomach wall near the pylorus out of the wound with the right hand, while with the left finger and thumb the abdominal wall is pressed back behind the pylorus rather than the pylorus brought up to the abdominal wall. There is much less disturbance to the respirations if this simple manœuvre is remembered and practised. The left hand now holding the pylorus, the incision is made longitudinally with the cutting part of the knife in the whole length of the hypertrophied part, stopping just short of the normal bowel on the duodenal side, but carried well up into normal stomach wall. (In the white, large, avascular type the commencement of oozing is the indication that normal tissue is reached.)

The site of the incision deserves a word. This should be placed as far back as can be comfortably arranged, since it then falls into alignment with the plane of the lesser curvature. In the large avascular type this plane is easily recognised as an area short of which the termination of the circular vessels can be clearly seen, and therefore as the situation of choice for the incision. In the small vascular type this area can only be selected in a speculative way by placing the incision as nearly in a plane with the lesser curvature as possible; or, in other words, as far back as can be managed comfortably. The incision is deepened with the knife edge in the middle of the tumour until the pearly mucosa is seen, and when this is exposed, towards either extremity, just short of the termination of the hypertrophied area. The knife is now inverted and the remainder of the operation completed with the blunt separator. The division in the stomach side is carried by a cutting movement of the blunt separator until the mucosa is seen lying beneath the thin and normal stomach wall. Finally, when the mucosa has been exposed over the whole length of the original incision, the blunt separator, by a side-to-side movement, combined with a little pressure of the instrument and a little squeezing with the left finger and thumb grasping the pylorus, completely frees the mucosa from the muscular wall, and allows it to protrude a short distance into the severed outer coats. These manœuvres take longer to describe than to practise. The pylorus and antrum are then returned to the abdomen and the abdominal wound sutured in layers. The whole operation can be performed quietly and comfortably in 5–7 minutes, and can always be guaranteed to last no longer than ten minutes. The simplicity and rapidity must appeal to every surgeon once it is recognised that such a wound in the gut can be left open with impunity. The most important point to remember is the adequate division of the sero-muscular coat on the stomach side; Case 5 illustrated the necessity for full division on the stomach side until normal stomach wall is reached. In confirmation of this may be quoted a case of Mr. L. E. Barrington-Ward's at Great Ormond-street. This child after operation had persistent vomiting, which was so characteristically of the obstructive type that Mr. Barrington-Ward operated a second time, completing the division of the hypertrophied portion on the stomach side. Vomiting ceased and the child recovered.

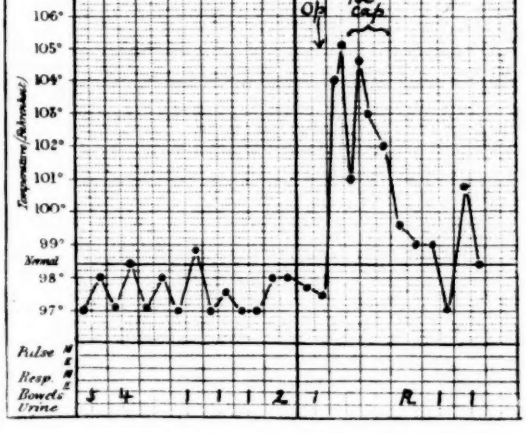
Mortality.

It will be evident that our first four cases gave high hopes of a safe operation with small risk. Subsequent experience was less fortunate so far as our figures were concerned, but very valuable for the purpose of establishing this operation as the method of choice in all cases. Our total mortality in all cases of Rammstedt's operation is 41·1 per cent., a marked improvement on the previous 100 per cent. Up to January, 1919, the total figure in hospital worked out at 38·8 per cent. In order, however, to ascertain the intrinsic value of this operation in uncomplicated cases, it is only fair that Cases 10 and 11 should be excluded, since they both died of purulent bronchitis after an operation performed (as offering, in our opinion, the only chance of recovery) during an attack of influenza and bronchitis then prevalent. This gives us 15 cases with 5 deaths, or a mortality of 33·3 per cent. Of the 4 remaining deaths, 2 (Cases 5 and 8) are attributable to lack of experience—i.e., to easily avoidable causes. For while Case 5 died from insufficient division, Case 8 died as the result of dividing too much. Any fair estimate of the intrinsic mortality of Rammstedt's operation, therefore, will be one which excludes deaths attributable to inexperience. Excluding these two cases, we have 13 cases with 3 deaths, or a mortality of 23 per cent. It will be seen that, with the operation conducted as we describe it (together with the indications for operation, palliative and post-operative treatment, which we shall shortly describe), the operative mortality of all uncomplicated cases (however poor their condition) works out at 23 per cent. We have only had two unexplained deaths in children operated on in good condition, for the other two remaining fatalities (Cases 7 and 17) were both very minute, sickly, and marantic infants. Therefore, while we estimate the mortality in *all* uncomplicated cases at 23 per cent., we feel justified in saying that mortality in *favourable or early cases* is represented in our series by 11 cases and 1 death, or a mortality of 9 per cent. A mortality of 9 per cent. in hospital practice, even with all unfavourable cases excluded, represents a striking plea for the adoption of this operation. Finally, we wish to lay stress on the fact that whereas the recovery of our first four cases was surely due in a large measure to good fortune, the lessons of our subsequent failures have, so far as in us lay, been turned to good account. Thus our results are improving steadily, as evidenced, not only by the recovery of seven out of the last eight consecutive cases, but by the rarity of post-operative vomiting in the later cases. We feel we can confidently predict a marked improvement in the figures in the near future.

Post-operative Temperature.

There is one point in connexion with this operation which is of great interest—namely, the post-operative temperature. We append a typical chart in one of our series where the child made an uninterrupted recovery. (Chart 4.) It will

CHART 4.



be seen that the temperature rose on the evening of operation to 105·2°, an ice-bag being applied to the head whenever the temperature rose above 104°. Finally, two of our series (Cases 12 and 17) died somewhat suddenly and unexpectedly (when their excellent progress had placed them out of obvious danger) three and four days respectively after operation. Progress had been eminently satisfactory and unaccompanied by vomiting. Post-mortem examination showed no obvious cause of death; and our view that these deaths

were independent of the operation is supported by a case (Case 18) of pyloric spasm where circumcision alone produced complete relief of symptoms. 60 hours later the baby died suddenly. Post mortem no cause of death could be found, and no hypertrophy of the pylorus was present. Case 19 is another similar instance in a case of hypertrophy, where circumcision relieved the obstruction. A study of nine cases which recovered shows that the highest temperatures reached were respectively 105°, 104°, 105°, 101·4, 105°, 104°, 103·4°, 105°, and 104°. Thus in only two instances did the chart fail to register 104° at least. The curious fact in this connexion is that the babies did not seem ill; and in several instances the observer would not have realised such an abnormal temperature from the child's appearance. The patients seemed to be none the worse, and the temperatures always fell to near normal on the second to the fourth day. We have been unable to find any satisfactory explanation of this phenomenon. It is not due to any infection at the site of the pyloric incision, for the post-mortem examinations never showed signs of peritonitis, with the exception of Case 8. Three of the cases showed a variable temperature previous to operation (from 97° to 101° or 102°), but this may have been influenced by saline and glucose infusion, and will not help to explain the abnormally high temperature after operation in practically all cases. The rise of temperature is of no importance, and we think it is probably central in origin. The application of an ice-bag to the head quickly reduces the hyperpyrexia. The other feature shown in this series is that vomiting only occurs exceptionally (and is not projectile in character) if the operation has been properly performed.

Advantages of Rammstedt's Operation.

From our study, up to the present, therefore, we do not hesitate to advocate Rammstedt's operation when surgical interference is necessary; and, in our opinion, it will in the near future take the place of every other surgical method devised for the cure of hypertrophic stenosis of the pylorus. In further support of this, Rachford also reports a post-mortem examination, six months after Rammstedt's operation, where the child had died from other causes. In this case, contrary to his experience after gastro-enterostomy (vide supra), no trace of the tumour could be found. Our own experience, both clinical and post mortem, has shown that after Rammstedt's operation the pyloric hypertrophy rapidly disappears. For in Case 17 five days after operation the hypertrophy had diminished by at least two-thirds of its former extent, and the mucous membrane lay almost smoothly round the incision. Further, so clearly and smoothly had the incision been sealed over by organised lymph, that it was difficult to reopen the wound in the sero-muscular coat.

IV.—*Treatment.*

It is a regrettable fact that the net results of treatment by all methods in all cases have not been good. During the years 1915–16–17 54 cases were admitted to Great Ormond-street. The majority of these were treated without operation, and in those where operation was performed various methods other than the Rammstedt's were employed. The total mortality was 80·5 per cent. The mortality of those operated upon was 100 per cent. There are three explanations of this fact:—

(*a*) The lack of an ideal operative technique where operation was indicated.

(*b*) The insufficient appreciation of any reasoned indications for operations owing to

(*c*) Failure to realise the true mechanism of the pyloric obstruction.

(*a*) A detailed analysis of the various operative procedures has been given, and it has been shown that Rammstedt's operation, by virtue of its simplicity and applicability to all cases (both early and late), is the only one to be advocated when palliative treatment has definitely failed and surgical intervention is indicated. Thus, at Great Ormond-street during the past year, when this operation was first performed, the mortality of our cases operated upon was 41·1 per cent. while the total mortality showed a proportionate decrease.

(*b*) and (*c*) Until the present no rational explanation has been offered of the nature of the pyloric obstruction. Thus, failing a sound basis for treatment, such treatment has been largely empirical, or dependent only on individual judgment. In a previous communication on the pathogenesis of pyloric stenosis an explanation has been offered of the occurrence at birth of varying degrees of pyloric hypertrophy. It was shown that in the large majority of these cases certain subsidiary conditions added to the stenosis produced by ante-natal hypertrophy, and initiated the symptoms of obstruction. These are:—

(1) Inhibition of pancreatic secretion dependent upon the original hypertrophy, or upon the superadded conditions of (2) gastritis, (3) spasm due to phimosis, (4) spasm from unknown causes.

(1) The normal sequence of events in which the amount of pancreatic secretion varies directly with the amount of acid chyme passing through the pylorus and over the duodenal mucosa has been shown by experimental physiologists. It has also been shown that, until such time as acid chyme has been neutralised by alkaline pancreatic secretion, the pylorus remains closed. We believe that the pancreatic function, antagonised originally by hyper-adrenalism, is at least diminished, so that the balance between these two fluids is disturbed. This results in a prolongation of the time during which the duodenal contents remain acid, and thus during which the pylorus remains closed. The function of the gland never can have been entirely abolished, but the formation of its external secretion would have to be stimulated indirectly by acid chyme in the duodenum. It follows that a diminishing amount of acid chyme passing through the pylorus results in the exhibition of still less alkaline secretion, and there is the increasing tendency of the pylorus to remain closed. So the vicious circle is established.

It must be conceded then that, when the amount of pyloric hypertrophy existing at birth is sufficient in itself to cause obstruction, the amount of pancreatic secretion exhibited will be the minimum. In this instance the vicious circle is established at once. Again, when there is a moderate degree of congenital hypertrophy the vicious circle will take longer to become established unless some other added cause results in a more rapid closure of the orifice. And, again, where there is only a slight degree of congenital hypertrophy there may be sufficient acid chyme passing through the pylorus to satisfy physiological requirements. In this instance the child would never show symptoms of obstruction unless there were added some other cause of spasm severe enough to complete the closure. And, finally, we must draw attention to those cases where there was no ante-natal hyper-adrenalism, and therefore no congenital hypertrophy, but where obstruction may result from severe pylorospasm alone. In this instance the obstruction is completely relieved by the removal of the cause of the spasm.

Such cases should never be considered in the same category with congenital hypertrophic pyloric stenosis.

(2) *Gastritis.*—Food remaining in the stomach an undue length of time will set up a retention gastritis, with consequent swelling and hyperæmia of the gastric mucosa. This clearly contributes towards the closure of an already stenosed pyloric orifice. The urgency of the symptoms will depend upon the relation between the degree of hypertrophy and the amount of gastritis.

(3) *Phimosis.*—It has already been shown how phimosis, or preputial adhesions, may produce spasm of the pylorus. We believe this to be the most potent cause of added spasm. This explains the fact that the great majority of babies presented for treatment on account of pyloric obstruction are boys.

It will be shown that these statements as to the relation of phimosis and gastritis with pyloric hypertrophy are amply borne out by the results of treatment.

(4) *Spasm from unknown causes.*—It cannot be claimed that gastritis and phimosis are the only causes contributing towards the complete closure of the pyloric orifice. John Thomson reports cases that have been cured by the administration of sedatives such as chloral hydrate; and we realise that there may be many unrecognised causes of pylorospasm, which, according to the relation between their severity and the amount of hypertrophy, might contribute towards closure of the outlet.

It will now be seen that, apart from extreme congenital hypertrophy, we are in a position to gauge the urgency of the

obstruction by the degree of secretory inhibition. This cannot be estimated accurately, but there are certain indications upon which conclusions may be based. Thus, when insufficient food for physiological requirements passes the pylorus, there are, in addition to the signs and symptoms upon which the original diagnosis rested, loss of weight and infrequent, hard, dry bowel motions. The consistence of the motion depends upon the absence of secretion, its size on the amount of food passing the pylorus. Soon after the obstruction is relieved, in addition to the cessation of vomiting and gastric peristalsis, the stools become more bulky, loose, greasy, and more frequent. The motions are of this character because, although the gastric secretion has a slight lipolytic action, pancreatic secretion is inhibited, and most of the fats are coming through incompletely changed. A reference to all our cases in which symptoms of obstruction were relieved with or without operation will support this statement. The digestion of the proteids we can accomplish, in a measure, by peptonising the milk, but the fats we cannot sufficiently modify. Emulsification and saponification cannot proceed in the absence of pancreatic secretion. As soon as this function has been re-established the stools will resume their normal consistence and the child will gain more rapidly in weight. It is against reason that the function of the pancreas, which has been inhibited for varying lengths of time, should be resumed the moment the obstruction is relieved. Accordingly we have found that the length of time necessary for the pancreatic secretion to be re-established is almost directly proportionate to the length of time it was in abeyance. Thus, children whose pyloric obstruction had been relieved by operative or palliative treatment ceased to vomit and began to gain in weight in from 10–14 days from the beginning of treatment. The stools in some still showed incompletely changed fat, and in them improvement, as evidenced by gain in weight, was not marked until the stools became normal. A reference to the charts of our cases will bear this out.

The only exception to this is in the case of girls. In them the onset of symptoms was more gradual, and the improvement consequently much slower. Reference in this connexion should be made to Cases 14 and 15. This, again, supports our contention that phimosis is the most potent cause of added spasm. Girls being exempt from this influence are much slower developing complete closure. In consequence of this the pancreatic gland, functionating incompletely for a long time, will take a proportionately long time in regaining its function. It is only after due appreciation of all the factors contributing to pyloric obstruction that we may now consider ourselves in a position to place the treatment on a rational basis. There are very definite indications as to the line of treatment to be advocated: (1) It must be *radical* when the secretory inhibition is established at once by a maximum amount of congenital hypertrophy at birth, and a minimum effect from added causes. (2) It will be *palliative* until we have determined, by treatment of the added causes of closure, whether their influence was the preponderating one or not. (3) We have a critical point in the progress of the treatment at which we know whether the obstruction has been relieved by the removal of one or more of these added causes. There are three general considerations in the treatment, common to all.

1. *Diet.*—In all cases the food given should be peptonised milk. This is not the place to establish the value of milk as the best artificial food, and we shall not labour the point. Breast-fed babies admitted to the hospital are given as many feeds from the breast as practicable and complemental feeds of peptonised milk. From the preceding observations it naturally follows that the milk should be peptonised. With one of the various media for pancreatisation we have the means of compensating for (at least as far as the proteids are concerned) the deprivation of pancreatic secretion. There is a 25 per cent. dilution of the milk in the process of peptonisation, and it is clearly superfluous to dilute further a milk whose proteid is already prepared for absorption. The fats and carbohydrates are well below 3 per cent. and require no further dilution. Although we know that fats are not well tolerated, it is not wise to eliminate them entirely, since their very presence in the duodenum may help to provoke the exhibition of lipolysins. We have not found it necessary to modify the quantity or the feeding interval. The usual amount for the weight and age of the child should be given, with no more than nine feedings in the 24 hours.

2. *Gastric lavage.*—In all cases gastric lavage should be employed. This treatment is based on the knowledge of the importance of gastritis as a contributory factor to completing pyloric obstruction. A mildly alkaline solution is used through a nasal or œsophageal tube. It should be carried out once or twice a day, depending upon the severity of the local symptoms. After operation it may be discontinued, since the obstruction has been relieved, and the re-establishment of normal drainage is all-sufficient. Otherwise, it is continued until the wash-out is free from mucus. Lavage is never stopped abruptly, but the intervals between the treatments are gradually lengthened until they can be dispensed with altogether.

3. *Constipation.*—Recognising the cause of constipation to be lack of bulk as well as of secretion due to pyloric obstruction, no cathartic should ever be given. A small oil enema or rectal lavage is all that is necessary. Apart from general considerations, the treatment will naturally fall into divisions: (1) Urgent treatment, (2) palliative treatment, (3) radical treatment.

(1) *Urgent treatment.*—Although we have demonstrated above that there is a critical point up to which we may safely pursue palliative treatment, there are two groups of cases which must be considered as presenting urgent indications for radical treatment.

(*a*) *Extreme congenital hypertrophy.*—In this small group the amount of hypertrophy present at birth is sufficient to cause obstruction. The babies forcibly eject the first and every subsequent feed, and gastric lavage with (in boys) circumcision fails to relieve the symptoms, even temporarily. These cases are to be considered as surgical emergencies, and should be operated upon as soon as the diagnosis is established.

(*b*) *Frail, puny babies.*—Some babies are not presented for treatment until the wasting, consequent upon the obstruction, is extreme. They have practically no reserve strength to face a possible operation. If their history is that of group (*a*) they are treated in the same way. If the symptoms date from later in life some factor has contributed to the closure of the pylorus. They are treated in the routine way with gastric lavage and fed with peptonised milk. Their strength is further fortified by the subcutaneous injection of 2 per cent. glucose in saline solution. In boys, if phimosis or preputial adhesions exist, circumcision is performed. Unless there is immediate (within two or three days) cessation of vomiting and the evacuation of larger, greasy stools operation takes place at once. If improvement is not obtained it *may* mean that the effect of hypertrophy preponderates over that of any added cause. These babies are so frail that we cannot afford to wait for the critical point—i.e., 10–12 days from the commencement of treatment. These, too, are to be regarded as surgical emergencies and operated upon immediately. In this connexion reference should be made to Case 17. It is thus seen that urgent treatment means operation upon certain cases within the tenth to twelfth day limit.

(2) *Palliative treatment.*—(*a*) *Secretory inhibition.*—It has been shown that the ultimate effect of stenosis of the pyloric outlet is suppression of the pancreatic secretion, which very suppression in itself contributes to the closure of the orifice. This condition can only be treated in one way. There must be sufficient acid chyme in the duodenum to stimulate the pancreas to normal activity. This can only be accomplished by relieving the pyloric obstruction. Thus, if by 10–12 days the routine treatment of eliminating any other cause of added spasm has not succeeded in securing a cessation of vomiting and the appearance of the characteristic stools, operation is indicated. We may say here, and this will also apply to any similar circumstance, we do not demand an *absolute* cessation of vomiting. There may be an occasional non-projectile vomit, but this is of no moment if the stools show that a fair amount of food is passing the pylorus and there is ever so slight a gain in weight. Our observations have taught us that all babies, in whom every contributory cause of closure has been eliminated and in whom symptoms of obstruction persist, come to operation. It has been shown that in no other way can the pancreas be stimulated to renewed function. Reference in this connexion should be made to Cases 16 and 17.

(*b*) *Gastritis.*—It is probable that in most cases of pyloric obstruction a certain amount of retention gastritis with

consequent swelling and hyperæmia of the mucosa is present. Where this is sufficient to complete the closure of the pyloric orifice its relief should result in the removal of the obstruction. Thus, in the case of a male infant recently admitted under Dr. Still the diagnosis was established in the usual way. There were neither phimosis nor preputial adhesions, therefore circumcision was not performed. He was fed on peptonised milk, and his stomach was washed out daily. About the twelfth day, the vomiting, which had been variable, ceased altogether; the stools, which had been occasionally loose, became more bulky, greasy, and more frequent, and he began to gain in weight. His improvement has been progressive ever since. In the case of Ivy M., the same procedure was followed, with similar results. Thus, gastritis in itself may be the determining factor in producing closure of the pylorus. If successful results are not obtained by this routine, and the possible effects of phimosis in boys have been eliminated, only one cause of obstruction remains—the preponderating element of hypertrophy with its attendant secretory suppression, for which operation is the only remedy.

We have referred elsewhere to the fact that girls do not behave in quite the same manner as boys. Uninfluenced by phimosis, the most potent cause of added spasm, they are slower developing symptoms of obstruction, and they will be correspondingly slower in showing improvement following relief from obstruction. For this reason we are disposed to wait longer than the 10–12 days before deciding that operation is indicated upon girls. We advocate this because the pancreas may be slower in regaining its function. Thus, if at the end of 10–12 days from the commencement of treatment there is still an occasional vomit with constipated motions, we do not operate unless there is marked or progressive loss in weight. We wait until a period of time has elapsed corresponding with that during which the symptoms of obstruction were developed.

(*c*) *Phimosis.*—We shall not again enter into a discussion of the relation of phimosis to pyloric stenosis. It is sufficient to repeat that we consider it the most potent cause of added spasm in boys. If babies in whom the diagnosis of congenital hypertrophic pyloric stenosis has been established show phimosis or preputial adhesions they should be circumcised, or the adherent prepuce separated at once. In Case 16 circumcision was immediately followed by complete cessation of vomiting, and the appearance of characteristic motions. Within a few days, however, the symptoms of obstruction began to reappear, and were well established by the tenth day. In this case phimosis was only a contributory cause of spasm, and was not the only one. Gastritis was eliminated by the failure of lavage to relieve the symptoms, since these reappeared. There remained the only cause of obstruction—hypertrophy plus secretory inhibition, for which operation was performed and gave relief. And in support we may again call attention to the fact that the child showed the largest pylorus we have ever seen.

Again, in Case 19, under Dr. Colman, circumcision was performed. There followed occasional vomits and loose motions. After the tenth day the patient did not vomit again. On the eleventh and twelfth days there were the frequent, bulky, greasy motions, and he began to gain. His improvement was progressive up to the time when sudden death occurred, as already reported.

There is also a child under the care of Dr. Colman who is now under similar treatment, and appears to be following a most satisfactory course. In these cases phimosis itself was the predominant factor in completing closure of the stenosed pylorus. On the other hand, Case 17, admitted under Dr. Poynton, was circumcised without any subsequent relief from the symptoms. As it came under Group I. operation was performed at once with immediate relief from the symptoms. In this instance phimosis had nothing to do with the closure of the pylorus.

(*d*) *Unknown causes of spasm.*—We must admit that there may be a very small group of cases where some unrecognised cause of spasm determines the closure of the stenosed pyloric orifice. We cannot satisfy ourselves that we have found any in our experience. But such good observers as John Thomson have had success, in some cases, by the administration of sedatives such as chloral hydrate. Such cases must be very few in number, and only the results of treatment such as we are advocating could differentiate them.

(3) *Radical treatment.*—The treatment becomes radical—that is, the pylorus is operated upon—when palliative treatment definitely fails to relieve the symptoms of obstruction by the twelfth day. This failure would mean that all causes of obstruction, other than the hypertrophy itself, had been removed; the only relief now is operation. During the twelfth day interval the symptoms may fluctuate. The vomiting may be non-projectile and less frequent. Gastric peristalsis is seen only occasionally. The stools are sometimes constipated and sometimes loose. The weight will vary between small gains and losses. The subcutaneous injections of saline and glucose will prevent any marked wasting. These fluctuations are of no moment before the twelfth day, but after this point they would indicate the inability of the pylorus to relax permanently. We do not say that all babies left longer than 12 days will not recover, but we do think that there is sufficient evidence to show that if they are to recover under palliative treatment they should usually indicate definite evidence of doing so by the end of the twelfth day. (We make an exception, as mentioned above, in the case of girls.) We consider that, after this point, the risk from operation is much less than the risk from a more or less permanent inhibition of pancreatic function becoming established, owing to prolonged pyloric obstruction. If this happened, even operation would be of no avail, and the children would die from marasmus. Moreover, a relapse might occur when operation would have to be performed under far less advantageous circumstances. (Vide Case 7.) The treatment, then, of babies in whom symptoms of obstruction persist beyond the twelfth day is surgical, and Rammstedt's operation should be performed.

With regard to the prevention of sudden deaths from unexplained causes, it is very difficult to suggest any way in which this definite percentage of losses, with or without operation, can be obviated. Similar accidents are reported in America and are well recognised. We have not yet made trial of blood transfusion previous to or after operation, but we propose trying a series of cases in this way, and comparing the results obtained with the figures we have already given.

V.—*Post-operative Treatment.*

When the child is returned to bed from the operating theatre it should be kept warm with wool wrapped about the extremities and preferably nursed on a water bed. If there is no shock we prefer the semi-upright position. There is sometimes a mild degree of post-operative bronchitis, which can be treated better in this position.

Diet.—This is an important detail. We have shown that the period of time necessary for the pancreas to regain its function is from 10 to 12 days. During this time peptonised milk should be given. Our practice is to give one ounce four hours after the operation, and a similar amount every four hours for the first 24 hours. The second 24 hours an ounce and a half is given every three hours. After this an amount is given according to the weight and age of the child. We have never found it necessary to feed smaller quantities. When the stools cease to show incompletely changed fats (usually about the tenth to twelth day) the food is changed to citrated modified milk. This change in the stools would indicate a return to the normal outflow of pancreatic secretion. Beyond this point they are fed as normal babies. We make an exception to the 10 to 12-day limit for this change of food in the case of girls. As shown before, in them the pancreas is slow to regain its secretory function for reasons already indicated, and therefore the peptonised milk usually will have to be continued longer than 12 days. Case 15 illustrated this. At the twelfth day the stools were still rather loose and greasy, and she was gaining very slowly. Citrated modified milk was given. The stools became more undigested and she began to lose weight. The food was again changed to peptonised milk and she immediately began to gain. The stools were still loose, but were free from curds. She is still on peptonised milk, which will be discontinued as soon as there is no evidence of undigested fat in the stools.

During the first few days after operation, while the child is taking insufficient food, we continue the saline and glucose infusions. At first eight ounces a day, and later four a day, may be given. The infusion should never be repeated unless the one previously given has been completely absorbed. If absorption is unduly slow it may be

expedited by the hypodermic injection of a ½ c.cm. of pituitrin. The combined saline-glucose infusion with pituitrin treatment is doubly useful, in that it combats post-operative shock, and replaces, in a measure, the food which must at first be withheld. We have said nothing about medicinal treatment, and we think there is seldom any indication for the administration of drugs. The only fear after operation is shock, and this is best treated in the manner described. Brandy might be advocated, but our experience has taught us that it may cause vomiting. As most of these small patients are in a precarious condition, they are not able to withstand the extra demand on their reserve made by vomiting. The work recently done on direct blood transfusion has suggested to us its employment on the more feeble of these patients. In a further series of cases it is intended to practise this at the time of operation. In cases which do not come to operation, we think this might advantageously be employed about the end of the second week, since two or three children have died from unexplained causes about this time, although the symptoms of obstruction had been relieved.

SUMMARY OF CONCLUSIONS ON BOTH CONTRIBUTIONS.

1. Congenital pyloric hypertrophy is the result of prolonged ante-natal spasm induced by hyper-adrenalism.

2. Pyloric obstruction is completed by two secondary influences: (*a*) retention gastritis with consequent swelling of the mucosa; (*b*) added spasm due to several causes; foremost by *phimosis*.

3. The final results in the closure of the pyloric orifice are: (*a*) absence of acid chyme in the first part of the duodenum, leading to (*b*) failure of secretin formation, leading to (*c*) suppression of pancreatic secretion. These factors themselves further induce (*d*) inhibition of the normal pyloric relaxation and establishment of the "vicious circle."

4. Positive diagnosis should never be made without the demonstration of a palpable tumour.

5. Rammstedt's operation is the operation of choice.

6. Fulminating cases demand immediate operation.

7. In all other cases palliative treatment should first be adopted as follows:—(1) Feeds: peptonised milk in appropriate quantities; (2) gastric lavage; (3) circumcision; (4) subcutaneous infusion of saline and 2 per cent. glucose when necessary; and possibly (5) administration of chloral hydrate.

8. *Duration of palliative treatment:* (*a*) Very wasted and weakly infants. If there is no relief of symptoms in 48 hours operation should be performed without delay. (*b*) In the majority of cases palliative treatment is to be persevered with for from 10 to 12 days.

9. The critical time at which failure or success of palliative treatment can be gauged is from 10 to 12 days from the commencement of treatment, and coincides with the re-establishment of pancreatic function in successful cases.

10. Failure to improve after this point constitutes an indication for operation in boys, but not necessarily in girls.

11. Sex incidence is about equal; phimosis being the determining factor in the onset and severity of symptoms in a large proportion of male subjects of pyloric hypertrophy.

12. Post-operative diet should consist of peptonised milk until pancreatic functions have been re-established.

Finally, we cannot conclude this study without expressing our thanks to the staff of the Great Ormond-street Hospital for their courtesy in placing at our disposal their cases and the hospital notes.

CHILD WELFARE IN BRITISH GUIANA.—The Baby Saving League of British Guiana was started five years ago. We have now received the (fifth) annual report for the year 1918. Such an institution appears to be greatly needed, for the infant mortality-rate is extremely high. For the year 1918, for the whole colony, it was 223 per 1000; for the Portuguese, 157; for the East Indian race, 241; for the Chinese, 143; and for the black races, 225. The need for a larger population in British Guiana is an urgent one. It is pointed out in the report that East Indian immigration is likely to be abolished, and a larger supply of labour is needed in order to develop the resources of the interior and to maintain the industries which are already established on the coast. Shortage of the labour supply is already reflected in the diminished acreage under sugar, notwithstanding the enhanced prices due to the world-war.

FURTHER EXPERIENCES IN COLONY TREATMENT AND AFTER-CARE.

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III.[1]

THE incidence of the new problem involved in the treatment of the discharged tuberculous soldier and sailor has so shaken our old beliefs and jarred our prejudices that we are in danger of attempting to grasp at an idea which we imagine may help us in the solution, while failing to evaluate the idea in that its fundamental principles are not understood. From the number of inquiries received, and from conversations with many, both lay and medical, who have visited Papworth Colony—interested in the problem of the treatment of tuberculosis—it has been brought home to us that even amongst those who have given, or are giving, attention to the matter there is a welter of opinion which must be rescued from chaos and carefully arranged and classified before any concerted action can be taken.

Chances of Success in Change of Employment.

The simple and oft-repeated formula, "Seek a job in the open air," glibly offered to the middle-aged mechanic, and the equally casual advice "to take things easy for the next three months or so" given to a man with a wife and six children to support, indicate only too clearly that little mental effort can have been brought to bear on the actualities of the situation. If there is one thing that experience of colony work has made clear it is that, as a rule, it is futile, and will now be criminal to give the above advice, unless it is realised that if there is one form of occupation more unsuitable than any other for the consumptive it is a job as an unskilled farm labourer.

The job in the open air—the utopian dream of the unthinking adviser—may be either Scylla, Charybdis, or both, but usually threatening the consumptive with destruction. The idyllic summer holiday at a farm, with its peace and rest, its plain but nourishing milk and eggs, its new and temporary interests, and its gentle exercises in the open air, is very different from the strenuous and exacting life of a farm labourer, even at an enhanced wage of 40*s.* per week. The unskilled hand, the untrained eye, and the inexperienced brain are of little value to the farmer, and certainly cannot be profitably employed. Though many members of the medical profession, and the vast army of voluntary workers, who so frequently give this advice do not realise its futility, it is a matter to which the consumptive is fully alive. It is only necessary to talk to these men and to obtain their confidence to have it brought home to one that they know better than their advisers that to set an unskilled man to work at any skilled trade is not only economically unsound, but physically detrimental and morally and socially delusive. To bring the matter home to ourselves we have merely to imagine how sorry would be the plight in which most of us would find ourselves were it necessary for us to give up our profession and seek pastures new. Why, then, give advice—fortunately rarely followed, or if followed quickly given up—which nine times out of ten can only be a source of disappointment to all concerned? The question:—How many men can be trained in agriculture in the course of six months? can only be put by a town-bred man with no knowledge of country life, and as it is impossible in six months to train a healthy man to follow a complicated industry such as agriculture, how much less is this possible in the case of a 50 per cent. man suffering from tuberculosis. Had the colony committee the changing of a man's occupation from that of an artisan or clerk to that of a farm labourer, or even a small-holder, for its objective it must

[1] Part I. was published in THE LANCET of Nov. 24th, 1917, and Part II. in THE LANCET of August 3rd, 1918.

inevitably court failure. A genuine case of pulmonary tuberculosis with a definite and progressive lung lesion will undoubtedly benefit by a prolonged stay under ideal colony conditions, but very few will ever be able to stand alone, and, working from morning till night, live on the produce of a small holding. The arrested condition of the disease in these cases is so unstable that the proposition cannot be a paying one, and this instability is the main medical cause, not taking into consideration economical and psychological factors of failure, and must necessarily remain so until some method of stabilising the arrest is attained. One of the difficulties met with in dealing with such a vast problem as that of tuberculosis is that exceptional results which do not appear to bear out general experience crop up now and again; but as a rule, if these exceptional results are carefully analysed, it will be found that the principles on which the colony treatment is based are sound and have not been violated, and that other special factors have come into play and have altered the course of events. In some cases change of employment has undoubtedly been attended with success, but these successes are few and far between, and have, as a rule, been associated with a group of such favourable contributory conditions that the truth of the general proposition is in no way countered. For example, a sympathetic employer may be an important factor in the determination of an apparently exceptional success fundamentally altering the patient's whole economic condition. He permits, nay ensures, the working of shorter hours, later morning rising, more prolonged noonday rest, with ample time for meals, and one of the prime factors in success—the feeling of the absence of competition is assured. The feeling "I shall not get the sack even if I slack a little when I feel weary" affords great psychological comfort. It must be remembered, however, that such philanthropy does not flourish freely in the largest concerns and in the limited liability companies: but the colony having learned much from the sympathetic employer, takes his place, and must strive to provide for all cases of tuberculosis not only the above conditions, but in addition suitable dwellings, good food, and protection from the economic struggle—the salvation of the consumptive working man. The exceptions proving the rule therefore, instead of militating against the general proposition, are of the greatest service as indicating the proper method of tackling the general problem. It is not so much the change of occupation that ensures the favourable reaction, nor certainly is it the mere fact that the patient becomes a farm labourer; for there is no magic in that occupation. Nor, again, is a light open-air job a panacea for the disease. Patients working at either, or both, unless carefully watched and guided become steadily worse and inevitably head for disaster. We must realise the actual economic conditions that are assured when a sympathetic employer has the case in hand, and also that these are necessary for the success of the undertaking. These fundamentals, these economic conditions assured, we are afraid to disturb them in any way, and the problem seems to us so vast that we are almost afraid to do or say anything that might lead to such disturbance.

Reason for Labour's Lack of Sympathy.

Has it ever struck us how extraordinarily unsympathetic the mass of labour—"the labour world"—is toward all schemes of sanatoriums and the like, and, if so, has it ever occurred to us to seek the reason for this? It is obviously the same reason that underlies the apathetic attitude of labour to the Government's training schemes for disabled sailors and soldiers, which are little more than camouflage, the mere tinkering with a huge problem. What should we, as medical men, say if, owing to a shortage of doctors, it was seriously proposed to give men a six months, or even a 12 months intensive course in medicine and surgery in the large hospitals and then turn the recruits loose to practise medicine and surgery on the community? It may be argued that this is not an exact parallel, but it is sufficiently exact if we leave out of account the question of danger to the public and consider only the amount of knowledge which the man could acquire from such a course. For the training of an efficient workman the present course as recommended and provided is absurd, and the working man knows it. That the skilled artisan does not wish his trade to be exploited by an untrained person is another aspect of the question, but one of equal importance. If we are simply patching up a patient in order that he may return to his original surroundings, where he may infect other working men, small wonder that the plan of utilising the sympathetic employer receives but scant consideration from the working man, who is thus called upon to run the risk not only of infection but also of diminished earnings due to the business being burdened by the introduction of the invalid.

The insufficiency of the training that can be given to a man disabled, whether by the loss of a limb or a lung, is very fully appreciated by the intelligent working man; not so fully by those called upon to advise, treat, and train him. The medical profession does not fully appreciate that there can be no other criterion of a patient's "cure" or of the arrest of his disease than that of earning capacity, more or less permanent. It is obviously of vital importance that the earning capacity of a consumptive should be restored to as nearly a normal level as possible. To alter a man's occupation, when the earning capacity of such a man is the standard of success, is no easy matter. Here earnings are of prime importance and a moment's thought will make it clear that in the majority of cases of pulmonary tuberculosis, those with well-developed disease, it is impossible for the earning power of the consumptive to be more than 50 per cent. of his normal—for him to be more than a 50 per cent. man. That some become 75 per cent. men is an encouraging fact, but we recognise that it is only under very special conditions that such a percentage is obtained.

Consumptive's Hopeless Handicap in the Open Labour Market.

If it be accepted that a "middle case" of consumption is unable to work for more than six hours per day at a trade which is not too laborious and not too technical, and is paid at a full trade-union rate of wages for those six hours, it is obvious that the man cannot earn during those restricted hours of work a sufficient sum to keep himself and his family in decent circumstances. In the ordinary workaday world an employer cannot be expected to take into his shops or factory a consumptive with a working capacity of only 50 per cent. and pay him above the trade-union rate of wages. There would soon be a general upheaval in that factory or shop, and a state of unrest such as that we have witnessed arising out of the exorbitant rate of wages paid to munition workers. Our hypothetical employer would have to be a philanthropist indeed who could or would consent, or dare, to adopt such a course. It is obvious, therefore, that even if we could find a sufficient number of sympathetic employers who would guarantee a full wage for a 50 per cent. worker our difficulties would not be at an end. A further subsidy is required, a subsidy that must come from the Government or State, as it is impossible to throw such a burden on the industrial employer of labour. As a rule, an employer asked to employ a consumptive answers that he would prefer to give a donation or subscription to some charitable institution, hospital, or sanatorium and have done with the matter. The disorganisation of business which would arise out of the employment of a consumptive on the only adequate basis, that of the maintenance of health of a patient and his family, is sufficient to undermine the whole scheme. Occasionally an employer willing to run the risk may be and is found, but the arrangement entered into does not as a rule last long. The danger of infection from the presence of a tuberculous worker is hinted at and rapidly passes through the shop. Moreover, if concessions as to hours, &c., are made to an apparently healthy man (the wound in the lung is not visible) it is with difficulty that the other workers are prevented from expecting and demanding similar concessions. The difficulties and obstructions set up by the trade-unions are equally great, in many cases debarring the consumptive from finding suitable employment. The embargo of the union is decisive unless the patient is a skilled workman, who in many trades must have served his full apprenticeship. This indeed is the fatal bar to the training of a consumptive in any new skilled trade. A few months spent in specially fitted-up shops at a colony is quite inadequate to obtain his admission into any skilled trade, in which wages are high, and, for the most part, adequate, and the corresponding trade-union, even should he have the ability to perform the work at the end of such a short period of training. From all points of view, then, the difficulty of training a consumptive in a *new* trade, to be carried on in the open market, is enormous, and there remain but the inadequately paid casual occupations, where the work is heavy and the remuneration poor, both factors to be avoided if success is to be attained or expected.

Return of the Consumptive to His Own Trade.

The myth of a "light job in the country" is exploded. The training of a consumptive in a "light remunerative calling" is not practical politics. There remain but two alternatives: (1) the consumptive must return to his own trade, or (2) he must become a permanent colonist. The former is the one usually adopted for the consumptive; it is at present the only course open to him, though in the majority of cases it must end in disaster. The economic conditions of competitive labour are against the man, and are fatal to success. The philanthropic employers who are willing to eliminate these fatal competitive conditions are few and far between, but to their sympathy and action we owe the cases which appear to provide exceptions to the rule; apparent exceptions only, but they serve as examples of methods which, if followed on a large scale, spell general success.

The nature of this method, call it after-care or any name which may indicate its nature, has as yet been but inadequately appreciated. The problem has almost invariably been viewed from the "individual cure" point of view, one small factor after another being taken and insisted upon. The new idea, which is the outcome of the colony as advocated at Papworth, is admirably expressed by Dr. H. A. Pattison in his study, "The Agricultural and Industrial Community for Arrested Cases of Tuberculosis and their Families," published by the Federal Board for Vocational Education, Washington, 1919. "Industrial communities," he says, "have developed rapidly in the country. Many of them have grown about a single industry for the sake of that industry, such as a steel mill, coal or mineral mine, &c. The converse proposition is the one I wish to offer, the development of industries around a community for the sake of that community." The same idea has been expressed as follows: "Let communities be started in which our consumptive soldier can live in his own home, shielded from the fierce competition of the outside world, a self-respecting worker, an economic asset. Let employment be found, the model factory erected, the hours of toil properly regulated, a fair wage paid."[2]

In other words, the rôle of the colony is that of the philanthropic but unfettered employer, with his factory open for the admission of those who cannot find work elsewhere, and where the mode of life—if a serious relapse is to be avoided—must be carefully regulated. That the disease will progress there can be little doubt, but the rate of its advance may be so controlled that the patient may yet enjoy many years of useful work and pleasant recreation, instead of having to engage in a brief struggle against overwhelming odds, the while seeing his family dragged down to poverty and want. In the model village the amenities of life are such that the wife and child are protected from all massive infection, and in time the latter will be free to compete in the world at large, unhandicapped by intervening years of want, malnutrition, and consequent lowered resistance. There may be little hope of altering at a stroke of the pen imperfect economic conditions in the world at large, but we now have ample evidence that small communities may be, and have been, inaugurated, where the conditions of existence may in time constitute a model for the workaday world outside. Such communities realise the dream of all social workers, and embody the aim and end sought by the consumptive workers of the world, who desire the priceless privilege of living in surroundings that will compensate for their segregation, while helping to protect the communities outside against dangerous sources of infection.

Essential Features of Consumptive Industries.

The features essential for the industries specially run for consumptives are many and complex, but the idea that such industries can be only those carried on in the open air must be abandoned as a practical proposition, and this for one reason among others, that enormous tracts of land would be required on which to carry them out. On an acre of ground, unless very highly and intensively cultivated, few people can be employed. An ordinary farm of 200 acres would afford employment for a number of hands infinitesimal as compared with the number of cases awaiting admission. It is, therefore, of primary importance that industries should be started capable of absorbing a greater number of workers per acre of ground. It is accepted that it is impossible to train a man in a new trade in the short space of time allotted, so it is obviously inadvisable to select an occupation in which elaborate training must of necessity take place; but from the munition works we have acquired experience which should be applied with great success in the employment of the consumptive. Strenuous and prolonged physical manual labour must be avoided and the use of modern machinery enables us to do away with such severe manual toil. It is now no longer necessary to set consumptives to work at carpentry, say, with a plane and a saw, and instruct them in the performance of labour which in all modern businesses is done by machinery. (Little wonder that on the old methods our goods could not compete in the open market.)

In a well-ventilated workshop with good aspect, fitted with modern machinery, the hours of toil regulated to a nicety by a sympathetic management, it is possible for consumptives to earn a reasonable rate of wages. That the wage earned is insufficient to keep the man and his family goes without saying, for, as already pointed out, a full trade-union rate of wages for the short hours worked is insufficient to provide for that standard of comfort which is essential for the well-being of the patient. We are dealing with the 50 per cent. capacity man, and no speeding-up machinery brought into play can do other than leave the percentage unaltered, but it does *relieve the patient of much too strenuous exertion*. The State must come to the rescue, and for its protection against infection must contribute a subsidy equivalent to some percentage of the patient's earning capacity. When once an industrial colony has been started it will be possible to employ numbers of subsidised patients at various trades, and an encouraging vista of employment will be opened up to our consumptives. All we have to do is to find out and provide the necessary conditions, and make rules and regulations whereby the most suitable working hours are ensured and excessive toil eliminated. Given these things, the labour of the consumptive may be made so remunerative that, while some subsidy will be necessary, it need not be large and will be well applied, especially when the advantages to the general community are taken into consideration. These applied elementary principles of colony treatment, common to all workers amongst the tuberculous, indicate a distinct advance along lines hitherto but little explored. Organisation is needed in order that these principles may be applied logically in the domain of practical politics in the near future. Here we must have organisation of the home life; there must also be a coördinated attack upon the disease, its effects and its causes, primary and predisposing; a full appreciation of the factors in the spread of the disease; and a realisation of the fact that all measures to be successful must be continuous, well-directed, and prolonged. Sir Arthur Newsholme, in his foreword to Dr. Chapman's report on colonies, appreciates the position exactly, except that he does not refer to the control of infection outside the home. "The greater part of the consumptive's life is spent at home, often under unsatisfactory conditions both for the patient and his family, and the supervision of his home life by the tuberculosis officer and the health visitor, even when this is frequent and sympathetic, does not completely meet his needs. If the patient is to have the best possible prospect of recovery, and if his family are to be safeguarded against infection, in many cases he will need (*a*) improved housing; (*b*) occupation adapted to his physical capacity, &c.; (*c*) the family income will need to be supplemented. These requirements for many patients have not hitherto been met."

Some System of Segregation Required.

They have not been met, and for the reasons given in the earlier part of this paper they are not likely to be fully met until some system of segregation is thought out and organised. The problem of occupation under private employers working for profit is not likely to be solved; it is impracticable, and, moreover, it may be prejudicial to the health of the other workers to have subsidised consumptives working alongside the non-tuberculous. With the provision of separate workshops and separate dwellings the difficulties, though not by any means removed, are minimised. Indeed, our thoughts directed into this channel, the colony idea acquires an entirely new significance. Formerly it meant the advocacy of open-air occupation, and the provision of those special conditions that were available for the wealthy few; it is not until we can get the public to view the matter from an entirely different angle that the full significance of the new colony idea becomes evident. From the fresh stand-

[2] Varrier-Jones: "A Plea for the Consumptive Soldier," Reveille, No. 2, 1918.

point facts which seem to have no place in our system assume a new importance, and fit in with the general scheme, helping to bind it into a concrete whole.

No scheme for the control of the tuberculous can be regarded as satistactory which does not embrace the whole life of the consumptive patient. But what scheme can control the whole life of a consumptive in our crowded cities, and where can an organisation be found to throw its tentacles into every yard and alley?

Recommendations of the Inter-Departmental Committee.

In the past we have gained a knowledge of the facts, but we have failed to view them from the right angle. Turn the picture round; let us get rid of preconceived notions, and build on the firm rock of experience and tried methods. Then, and then only, will progress be made and success attained.

We now note with interest that the Inter-Departmental Committee on Tuberculosis appointed in April, 1919, "to consider and report on the immediate practical steps which should be taken for the provision of residential treatment for discharged soldiers and sailors suffering from tuberculosis and for their reintroduction into employment, especially on the land," has, as a result of its inquiries, and reporting very promptly, recommended that the Papworth Colony, with its various departments, should be adopted for development in various centres all over the country. That it may be improved and developed we recognise very fully. That there are difficulties to be overcome we have ample experience. But that it is based on sound lines we are satisfied, and for this reason, and not because it has been built up in Cambridge, we welcome the recommendations of the Inter-Departmental Committee.

TREATMENT OF SEPTIC WOUNDS BY IONISATION.

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CASES were treated at a general hospital at the request of Colonel G. W. Crile, M.C., U.S.A., to demonstrate the effect of ionisation in rendering wounds aseptic for delayed primary suture.

Account of Experiments.

The action of the metallic ions on suppurating wounds, particularly zinc, is well known, and I decided to try the effect of the chlorine ion. Several laboratory experiments were carried out to show that the chlorine ion was detrimental to the growth of bacteria. Although several observers have described the effect of the electrolytic current on bacteria, I can find no description of apparatus. Accordingly apparatus were devised for my purpose. In one experiment a glass tube about 1½ inches in length is closely fitted at each end with a carbon electrode which is fitted into a rubber tube. The rubber tube acts as a cork and as a non-conducting cover for the wires leading to the milliamp. meter. Before use the rubber, glass tube, and electrodes were sterilised by boiling. The solutions to be tested were placed in the glass tube, which was then placed in a water bath kept at blood temperature by a lamp.

Experiment 1.—An emulsion of *Staphylococcus aureus* and *albus* was prepared with a normal saline solution at blood heat. The electrode and rubber tube were removed from one end of the glass tube and the tube was almost filled with emulsion. A drop was then taken with a loop and smeared on agar-agar in a test-tube as a control. The electrode and rubber tube were then placed tightly into the glass tube and the whole placed in the water bath. Currents were passed of 5 ma. for 5 minutes, 10 minutes, and 15 minutes respectively. At the end of each period of time a drop was taken by a platinum loop dipped into emulsion, and a smear was made on marked tubes containing agar-agar.

A second series, in which 10 ma. were passed for 5 minutes and 10 minutes respectively, was also taken. The tubes were then placed in an incubator for 18 hours with the following result:—

First series. Tube A control.—Profuse colonies of *Staphylococcus aureus* and *albus* covering entire media.
Tube 1. 5 ma. × 5 minutes.—Profuse colonies of *Staphylococcus aureus* and *albus*, not so abundant as on control.
Tube 2. 5 ma. × 10 minutes.—Colonies of *Staphylococcus aureus* and *albus* discrete, small, and fewer than in tube 1.
Tube 3. 5 ma. × 15 minutes.—Agar-agar practically sterile, only one small colony survived.
Second series. Tube 4. 10 ma. × 5 minutes.—Colonies discrete and identical in appearance with tube 2.
Tube 5. 10 ma. × 10 minutes.—Agar-agar sterile. No growth.

Deduction.—Electrolysis with sodium chloride will inhibit the growth of *Staphylococcus aureus* and *albus* with a short exposure and with a low current strength. 10 ma. given for 10 minutes is sufficient to render a culture sterile.

Experiment 2.—A microscope slide is prepared with a plasticine cell and the walls of the cell are perforated by the platinum wire. A drop of emulsion of *Staphylococcus aureus* and *albus* was placed in the cell with a few drops of normal saline. The cell was then placed on a warm stage, which was kept at blood heat by siphonage of warm water. The electrodes were then connected with the milliamp. meter. The warm stage was then placed on a microscope stage and a current of 2 ma. passed. There was an immediate activity of the cocci and a general flocking towards the positive pole. The current was increased to 4 ma., when the bacteria arranged themselves in apparently three layers around this pole. At the end of five minutes all movement of cocci had ceased.

Experiment 3.—Similarly prepared with plasticine cell. A smear of living culture of gonococcus was placed in cell. A few drops of fresh human blood were then dropped on the gonococci and the whole covered with a cover-glass and placed on a warm stage and connected up with the milliamp. meter as before. 0·5 ma. was then passed for 10 minutes. Gas was given off at the negative electrode and a small drop of blood escaped at the point where the electrode passed through the plasticine. The cover-slip was removed and the plasticine lifted off slide. The blood clot was carefully washed off with normal saline, the slide was then fixed with heat and stained with methylene blue, covered with a slip, and examined under high power with oil immersion. It was observed that complete phagocytosis had occurred. Practically every leucocyte was crowded with gonococci. A few gonococci were extra-cellular.

Deduction.—Phagocytosis is probably stimulated by a small current passed for a short time.

Clinical Results.

I determined to use sodium chloride in treating wounds as likely to cause less irritant effect on the tissues than the metal ions. The average administration was 10 ma. for 20 minutes daily, the wound afterwards being dressed with sterile gauze soaked in normal saline. No other antiseptic was used. In a few cases of cellulitis where the œdema was very marked one hot pack was applied at night-time. By this means the skin was never rendered sodden.

Six cases were treated and sutured, 4 with success and 1 with only partial success. The sixth case broke down and was evacuated to England owing to pressure on hospital accommodation.

Twelve cases of cellulitis were treated, and these were entirely successful. The pain was considerably lessened, and the final result, even in cases in which tendon and tendon-sheaths were involved, showed fewer signs of contracting scar tissue than generally occurs following septic infection of the tendon-sheaths.

Other types of cases were through gunshot wounds of extremities.

Three cases were treated with a view of preparing the surface for skin-grafting, and in one case periosteum was grafted on an exposed tibia.

Four cases in which a joint was exposed and septic were treated, one with complete success. The remaining three cases (two elbows and one knee) had multiple wounds, and the patients were in such a feeble general condition that treatment with ionisation was not carried out on account of the lowered vitality due to multiple wounds.

Technique.—Where it was possible to immerse the limb the injured part was placed in a porcelain bath with a carbon electrode. The inert electrode was placed either under the patient's buttocks or strapped to an uninjured limb. Where immersion was impossible several thicknesses of lint were wrung out in a 1 per cent. sodium chloride solution and Carrel's tubes were placed in contact with the wound and covered with the lint, leaving the open end of the tube free. An electrode was then bandaged to the lint. By means of the Carrel's tubes it was possible to keep up a fresh solution through a sterile glass syringe while the treatment was carried on.

Several cases were examined bacteriologically; examination was made previous to the operation. [A series of cases was here given supporting the statements in the text.]

Conclusions.

Ionisation with chlorine or zinc does not possess any advantage over other methods for sterilising a wound for the purpose of delayed primary suture.

Cases of cellulitis show a marked improvement when treated with ionisation, both in the relief experienced by patient and in the final result, which in every case treated was extremely satisfactory, cicatricial contractures being practically unseen.

The fact that one septic joint recovered indicates that the treatment is well worth trying in similar cases.

My thanks are due to Lieutenant-Colonel R. B. Ainsworth, D.S.O., R.A.M.C., for allowing me to carry out these investigations, and to Colonel Crile for supplying the cases and apparatus and for his extremely helpful suggestions and advice.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

AN UNUSUAL CASE OF RETROVERSION OF THE GRAVID UTERUS.

BY R. BURTON ECCLES, L.R.C.P., M.R.C.S.

THE following unusual case of retroversion of the gravid uterus deserves record:—

I was sent for to attend a woman, the message saying that a piece of bowel 10 inches or more in length had been protruding for a week, and there had been no evacuation of the bowels for the same period, although large doses of castor oil, cascara, and Epsom salts had been taken.

On arrival I found the patient, a woman, aged 27 years, in bed, looking very ill, and complaining of great pain in the back and lower part of her body. The history I got from her was that 14 days previous to my coming she had a sudden pain in the lower part of the body and the back, with frequent desire to micturate. Then the abdomen gradually began to enlarge. Though she had constant dribbling for 14 days, she had been able to pass, each day, a few ounces of clear-coloured urine, and she passed clear urine while I was in attendance.

On examination I found the abdomen very greatly enlarged, giving me the impression at first sight that she was probably in the eighth or ninth month of pregnancy. The body was hard and dull on percussion, the dullness extending above the umbilicus to the ensiform cartilage. The right thigh and leg were enormously swollen and œdematous, also the vulva, the right labia forming a large cushion reaching up to and completely obliterating the anal aperture; serous fluid was oozing from both labia. I then passed a catheter and drew off 104 oz. of dark bloody urine. Per vaginam I felt, with great difficulty, the cervix pushed high up behind the symphysis. The posterior fornix was obliterated by a large, elastic, globular swelling, which filled up the vagina. Per rectum I felt a large substance, which was, in fact, a retroverted uterus. I ascertained from the patient that she had last menstruated three and a half months ago, and came to the conclusion that I had an incarcerated, retroverted, gravid uterus to deal with.

I first tried to replace the uterus bi-manually and failed. As I did not care to use bullet forceps on so œdematous and congested a cervix, I replaced the uterus by the knee-elbow position, the patient at once remarking, "What a great comfort," and that she was now free from pain. I then introduced a Smith-Hodge pessary to keep the uterus anteverted. There was complete atony of the bladder, and a catheter was passed every six hours for eight days. A mixture of hexamine, sodium benzoate, and tincture of nux vomica was given every four hours.

The patient made an excellent recovery. At the end of the fifth month of pregnancy I removed the pessary. Four months afterwards she gave birth to a fine, healthy male child, the labour being quite normal.

The points in this case, unusual in my experience of country practice, are the absence of serious complications, such as sloughing of the bladder or septic cystitis, and the fact that the woman went on to full term of pregnancy and gave birth to a healthy child.

Driffield, East Yorks.

SPONTANEOUS CURE OF STRANGULATED INGUINAL HERNIA.

BY W. FLETCHER STIELL, L.R.C.P., M.R.C.S.,
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I AM taking the opportunity of recording this case, not as a plea to wait, watch, and expect such a happy result to ensue from so serious a condition, but more as a surgical curiosity.

A man, aged 37, had been suffering from a swelling in the left groin for about five years. He had during this period consulted several doctors, who had unanimously wisely advised cure of the hernia by operation. The patient was, however, of the procrastinating type and had failed to follow the advice given. On Feb. 4th, 1918, the patient attended the Lincoln County Hospital on account of a painful swelling in the left groin. He gave the following history:—

History.—He had noticed the swelling for about five years, he "knew it was a rupture," and as he had never had any difficulty in effecting reduction of the hernial contents, did not think an operation necessary. In December, 1917, the tumour had suddenly increased in size, had become both painful and tender, and could never again be reduced. There was at that time some generalised abdominal discomfort, but no vomiting, constipation, or other symptoms to suggest any intestinal obstruction.

At the actual time of admission to hospital all abdominal symptoms had disappeared and there were no abnormal physical signs in the abdomen. In the region of the left cord, just below the external ring, there was a well-defined, hard, non-cystic tumour, which was neither painful nor tender. The mass was fairly freely movable from side to side, but was fixed in a vertical direction. It was found impossible therefore to reduce it, either into the abdomen or into the scrotum. The testicle itself was unaltered, and a normal vas deferens could be traced upwards behind the tumour.

Differential diagnosis.—The differential diagnosis at this stage of examination rested between: (*a*) an omental plug in an incarcerated inguinal hernia; (*b*) fibroma of the cord; (*c*) an organised hæmatoma of the cord from forcible attempts at reduction by taxis on the part of the patient himself.

Operation.—Operation was performed on Feb. 5th, 1918. The actual technique and procedure of the operation were in a large measure similar to an ordinary radical cure for inguinal hernia, so that it is unnecessary to describe them in detail. The tumour was occupying the inguinal canal with the aponeurosis of the external oblique and the external abdominal ring stretched tightly over its anterior surface. The tumour itself was everywhere surrounded by a thickened peritoneal investment, to which it was closely attached by old-standing and somewhat vascularised adhesions. The various constituents of the cord were lying posterior to the tumour, and were abnormally adherent to its peritoneal lining. When traced in an upward direction the peritoneal coat of the tumour gradually merged into a small strand of dense fibrous tissue, and the internal ring was solidly and absolutely occluded. The cord was thoroughly isolated, the tumour, together with its peritoneal investment, removed, and the operation completed, as in Halstead's method of radical cure. Convalescence was uneventful and, although no peritoneal neck to the sack could be ligatured at the internal ring, there has been no recurrence of the hernia after 18 months.

Microscopic examination.—Microscopic examination of the tumour was performed by a pathologist, who was intentionally given no information of the case, and his findings are therefore of interest. He stated that "this is a mass of fat showing fibrous alveolation. It is undergoing fibrous degeneration and inflammatory infiltration. No evidence of tubercle or new growth. There is no evidence to show how it has originated."

Remarks.—Taking into consideration the history of the case, the findings at the operation and the histological examination, there can be little doubt that the tumour owed its origin to an omental plug in the strangulated inguinal epiplocele, which had undergone a process of aseptic ulceration at the internal abdominal ring, with subsequent complete stenosis of the ring. The tumour, therefore consisted of a mass of omentum which, at the time of operation, possessed no actual anatomical connexion with the main mass of the great omentum.

For permission to publish this case I am much indebted to Major D. J. G. Watkins, R.A.M.C.(T.F.), who performed the operation.

Reviews and Notices of Books.

War Neuroses and Shell Shock. By Sir FREDERICK W. MOTT, M.D., LL.D., F.R.S., Brevet-Colonel, R.A.M.C. (T.), &c. With Preface by the Right Hon. CHRISTOPHER ADDISON, M.P., Minister of Reconstruction. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 348. 16*s*.

WITH a good deal of Sir Frederick Mott's excellent and comprehensive volume on war neuroses the profession has already become acquainted through previous publication in the form of lectures or otherwise, not infrequently in our own columns. To have at hand, however, a useful "body" of doctrine on the functional neurology of war is almost a sine qua non for the practitioner, in view of the large number of functional cases still requiring at least a modicum of treatment. In Sir Frederick Mott's book will be found all he needs on the practical side, for treatment is discussed in detail, together with clinical studies of the multifarious types of war neuroses and interesting analyses of the pathogenesis of such disorders. The author is catholic enough to appreciate the value of the Freudian theory where affections of the psyche are concerned, but he points out the inadequacy of certain Freudian contentions in the case of the typical war neurotic, and emphasises the importance of the commotional element, introducing material that formed part of his Lettsomian lectures[1] on "The Effects of High Explosives on the Central Nervous System." He goes beyond the commotion, however, to elaborate the greater importance of the emotional shock in the perpetuation of symptoms, and furnishes numerous confirmatory clinical illustrations. A section of the book is devoted to study of the phenomena of gas poisoning, both on the clinical and on the pathological side. We do not suppose the practitioner is likely to observe any variety of symptom or symptom-complex of a functional sort, nervous or mental, which is not at least touched on in this book; nor need he be at a loss how to deal with such cases, for Sir Frederick Mott devotes many pages to a discussion of the means of promoting convalescence and of establishing an atmosphere of cure.

In comparatively small compass the results of five years' familiarity with the problems of functional war disorders have been garnered, sifted, and offered for consideration, and we agree with Dr. Addison that a book which is the outcome of such unusual experience cannot fail to be of great value.

Psychoses of the War, including Neurasthenia and Shell Shock. By H. C. MARR, Lieutenant-Colonel, R.A.M.C., M.D., Neurological Consultant to the Scottish Command, &c. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 292. 16*s*.

Dr. Marr bases his interesting volume on material derived from the observation of no less than 18,000 officers and men, of whom approximately one-half were sufferers from shell shock and neurasthenia, and one-half from more definite mental disorders. The book, however, is not a mere précis of information on war psychoses, inasmuch as its author devotes some space to general observations on the pathogenesis of mental disease, to its types and their clinical expression, to cerebral anatomy and mental pathology, and to infantile mental deficiency. Further, there are sections on the classification of mental affections, on mental case-taking, and on the cerebro-spinal fluid. Not a few of the useful clinical photographs reproduced are of cases of mental disorder in the female sex and of mental defectives who can never have been in the Army. We might, in fact, suggest to Dr. Marr that his title is rather misleading and unnecessarily restricted; his book really constitutes a concise and readable compendium of mental diseases, illustrated by a large number of clinical records derived from military material.

Dr. Marr divides his subject into the four main groups of infantile mental deficiency, adolescent mental enfeeblement, toxic (confusional) psychoses, and organic psychoses. The respective percentages of these in 3755 cases of mental affection in soldiers were 42·31, 8·92, 36·73, and 12·04. It is somewhat surprising to learn that 42 per cent. of the soldiers admitted to mental hospitals were found to have been weak-minded from infancy, but an adequate explanation is forthcoming in the fact of the capacity for manual routine labour of all kinds exhibited by the mental defective, at least under direction and supervision; their docility and usefulness leads to their being employed on work for which they are quite unsuitable, with the inevitable result. Dr. Marr charitably exonerates the authorities from blame; the mental defective shows, as a rule, no gross bodily physical defect, his mental state does not obtrude itself except in the face of responsibility, and in doubtful cases expert medical investigation is not likely to be always at hand. His second group comprises primary mania, melancholia and dementia, as also alternating insanity and idiopathic epilepsy—conditions in which inherent neuronic weakness is unable to resist the united strain of adolescence and military service. The third group, the second largest, includes the psychoses of both known and unknown toxic agents, the presence of which in the circulation "acts as a veil between the mental functions and the external world." The fourth group deals mainly with neurosyphilis, but also with trauma, arteriosclerosis, and cerebral tumour.

Dr. Marr's selected clinical cases are described in a fresh and informative fashion, which adds to the attractiveness of a useful, unpretentious exposition of the main facts of mental disease, wonderfully complete for its size, well illustrated, and with a good index.

Psycho-Analysis and its Place in Life. By M. K. BRADBY. London: Henry Frowde and Hodder and Stoughton. 1919. Pp. 266. 8*s*. 6*d*.

Miss Bradby's standpoint is that of the trained psychologist, who is also a humanist, and impressed by the possibilities of life in general which, she believes, seem to open up as a consequence of the discoveries in the realm of thought of Freud and Jung. Her rôle is, in part, that of the expositor, to the educated man or woman, of the meaning of psycho-analysis, but she also makes a persuasive appeal to the psychologist to interest himself at least as much in feeling and willing as in knowing, and to the Freudian psycho-analyst not to ignore such ruling passions of humanity as are not embodied in sexuality.

The reader will find much that is admirable in Miss Bradby's presentation of her subject, which is marked by erudition and independent thinking and by a freshness of exposition and originality of view which will impress those of us who may confine our attention too strictly to the volumes of the medical profession proper.

Miss Bradby at the outset correlates the knowledge of the unconscious mind derived from psycho-analytic investigation with that of the nature and development of mind in primitive man and with our knowledge of the mind of the child. The mode of working of the unconscious mind is sketched and Freudian theory more or less accepted. The Freudian interpretation of dreams is favourably reviewed and various dreams, historical and private, are analysed. The author then considers the application to social and individual conduct of the knowledge of hidden and unconscious motives acquired by psycho-analytic procedures, and ends on a note of enthusiastic hope for future progress, especially in the sphere of education, as the result of such self-knowledge.

It will be understood that Miss Bradby deals mainly with the application of psycho-analysis to the normal mind, and only incidentally, and, we may suppose, at secondhand, with mental disease. She is not on sure ground when she speaks of "perfectly natural normal homosexuality," repressed into the unconscious "in sensitive and upright minds, with results that are always injurious to health and often to sanity." Assuming the facts, they are capable of a quite other, medical, interpretation. Other statements that have a bearing on medicine require more substantiation than is given them, which is perhaps unfortunate, for the lay reader may be inclined to accept as proven what are not specified by Miss Bradby as psycho-analytic assumptions. More generally we get the impression that there is a certain tacit disregard of the significance of the conscious life, as being of less value than unconscious mental activity, and we feel that there is also an unwitting minimising of moral upbringing and the formation of good habits by influence from without, as though knowledge of the unconscious self were somehow to make men all that they should be. But is there any dynamic force in

[1] THE LANCET, 1916, i., 331, 441, and 545.

such self-knowledge, assuming it can be acquired by psycho-analysis? Has it any driving power for good as against evil? Will the dragging of unconscious motives and impulses into the full light of consciousness of itself make us pursue the good? It may be pointed out, further, that springs of action are far from being always as deep down and as hidden as Miss Bradby's reading of the Freudian position suggests.

What is Psycho-Analysis? By ISADOR H. CORIAT, M.D., Physician for Diseases of the Nervous System, Boston City Hospital. London: Kegan Paul. 1919. Pp. 124. 3*s.* 6*d.*

FROM the preface we learn that this little volume, on the question-and-answer system, is intended for "physicians, clergymen, social workers, and laymen" who are interested in psycho-analysis from the point of view of its aim, purpose, and field of usefulness as a therapeutic procedure. The deduction is allowable that Dr. Coriat sees no disadvantage in individuals becoming familiar with psycho-analysis (as a therapeutic procedure) who can have no trained knowledge whatever of organic or functional nervous disease. It appears to us that the important distinction between psycho-analysis as a method of investigation of the mind, normal or abnormal, and as a means of treating functional nervous disorders, is thereby in danger of becoming eliminated. Many psychologists, many workers in cognate branches of science, are legitimately studying the applicability of Freudian technique to their own subject, but it is a long step from this to the handling of the mind diseased, unless we are to be content to let the opportunity slip and allow non-medical intervention in therapeusis an even larger scope than it has already. No one who is familiar with the results of misdirected, because ignorant, lay treatment can view the prospect with equanimity.

Dr. Coriat follows conventional Freudian doctrine in his little sketch, minimising the difficulties and avoiding as far as may be the contentious aspects. Like Freud, he maintains that under no circumstances does the element of suggestion enter into psycho-analysis, notwithstanding the obstacles in the way of the acceptance of this statement. It is a counsel of perfection to say, as Dr. Coriat does, that "no explanations or suggestions are made to the patient during the course of treatment," for in another section he declares that "the ethical value of psycho-analysis depends upon telling a patient the truth," in other words, explanation. In one answer we find the statement that "libido means vital energy or instinct; it is not always sexual, since the instinct may be hunger or nutritional." Two pages farther on we read that "the sexual instinct displays itself very early in the child, first as the sucking or nutritional instinct"—a contradiction illustrating the preconceptions of the crystallised Freudian mind. We are glad to be assured, however, that "if psycho-analysis be properly carried out it refers less to sexual activities than does the usual medical history of an organic illness."

Shell Shock, Commotional and Emotional Aspects. By ANDRÉ LÉRI, Professor in the Faculty of Paris. With Preface by Professor PIERRE MARIE. Edited, with Preface, by Sir JOHN COLLIE, M.D., C.M.G. London: University of London Press. 1919. Pp. 249. 7*s.* 6*d.*

WE gave a favourable review of this book on its original appearance in the Horizon Series of military manuals published by Messrs. Masson, of Paris. It is, in our opinion, one of the very best of all the productions bearing on shell shock, and we are confident that its reception in English form will corroborate this opinion. When Charcot was congratulated on the lucidity of his lectures by a foreign confrère well qualified to do so, he replied deprecatingly: "Ah, Monsieur, it's our language." It is not, however, a question of language merely; the Gallic mind has the power of expressing itself with unusual clarity, consecutiveness, and conciseness. All these qualities are found in Professor Léri's excellent monograph.

Vegetative Neurology: The Anatomy, Physiology, Pharmacodynamics, and Pathology of the Sympathetic and Autonomic Nervous Systems. By Dr. HEINRICH HIGIER, of Warsaw. Authorised translation by WALTER M. KRAUS, M.D., New York. New York: Nervous and Mental Disease Publishing Co. 1919. Pp. 144. $2.

Dr. Higier's monograph appeared originally in the *Ergebnisse der Neurologie*, which came to an untimely end, after only three or four issues had appeared, on the outbreak of the war. The edition published in English is a faithful translation of the original, but the illustrations are not, this time, in colours—somewhat of a drawback, as some of them are very complicated. No student of neurology wishing to keep abreast of knowledge should be without this monograph, in which the author, collating from the widest sources data bearing on his subject, has organised his material into a *revue d'ensemble* which is a model of what such reviews should be. It is not a rival but complementary to such a study as Gaskell's "Involuntary Nervous System"; it does not contain personal original work, but, on the other hand, it represents a laborious marshalling of facts and an able selective skill on the part of the author. The translator has spared us Americanisms, but a painful number of slips have been allowed to escape the proof-reading—e.g., sphincter anus, rami communicanti, was deferens and prostrate, nerve bundles or plexi, different than, mucus colitis, &c. "Unreactibility" (p. 79) is not an Americanism: it is a monstrosity.

A Conspectus of Recent Legislation on Venereal Disease in the British Dominions and United States of America. By DOUGLAS WHITE, M.D. London: Published by the National Council for Combating Venereal Disease.

WE welcome this pamphlet not only on account of the systematic presentation of the recent legislation on venereal disease in the countries mentioned, but also by reason of the interesting statements as to the results which have accrued from such legislation.

This valuable pamphlet, under the heading of "Conclusion," contains some most suggestive remarks by Dr. White on the subject of legislation in Great Britain, with reference to the Act of Parliament of 1917. "How much further, and in what direction," he pertinently asks, "are we prepared to move"? He then considers the questions of: (1) notification; (2) penalisation of the conscious transmission of disease; (3) the active repression of prostitution; (4) the safeguarding of marriage against disease.

Dealing with the subject of prophylaxis in the U.S.A., Dr. White writes: "No reference is made to this method in any laws or regulations. All the bureaus of health, who have replied to a query on this matter, express distrust and disapproval of prophylactic 'packets' as likely to defeat the object in view. Some go further and include in their disapproval 'early preventive treatment.' Some express approval of the latter method, but it has not apparently been instituted, unless sporadically, except by the military authorities in the area of the camps. In these, however, good results have been obtained."

The author has dealt successfully with each of the four subjects indicated above and may be congratulated on the attainment of his professed objective—namely, to give information succinctly and to stimulate thought.

Injuries to the Head and Neck. By H. LAWSON WHALE, M.D. Cantab., F.R.C.S. London: Baillière, Tindall, and Cox. 1919. Pp. 320. 15*s.*

THE title of this book is misleading, as the injuries described are, without exception, those due to gunshot wounds about the head and neck; injuries such as those found in civilian practice are not dealt with. Injuries to the vault of the skull, the brain, and the eye are not described, the book dealing only with injuries to those parts which come within the province of the oto-laryngologist; to which is added a chapter upon prosthesis and plastic operations after severe injuries to the face and jaws.

The book contains full records of numerous interesting cases, which illustrate the signs, symptoms, and method of treatment of injuries in this region of the body. This is not a text-book for students, but Mr. Whale has produced a volume which should appeal to the practitioner who is interested in the broad lines of treatment which have been employed in the treatment of war injuries of the head and neck. The plastic work upon the face is new, describing the procedures necessitated by war conditions, but the recognised methods of civil surgery have been modified to suit the special cases treated. The book is written in a pleasant, discursive style, and is well and fully illustrated.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 20, 1919.

Malaria in England.

MALARIA at one time was endemic in England, and traces of its presence could still be found in some London hospitals as late as the early "seventies," patients being sometimes admitted from Essex and other districts for the treatment of enlarged spleens or "ague cakes." The prevalence of laudanum-drinking among the agricultural population of the low-lying districts of Lincolnshire as late as 50 years ago was explained as being due to the need for taking an anodyne to mitigate the discomforts of their recurring attacks of ague. Of late years, however, there has been a general impression that draining and bringing under cultivation of much marshy and waste ground has led to the disappearance of endemic malaria in the affected parts of England. Up to the outbreak of the war little notice was taken of imported malaria cases, it being assumed by many persons that our local mosquitoes were not likely to act as carriers of the infection. But when our soldiers began to be invalided home as the result of malaria contracted mostly in the Eastern war zones, and especially in Macedonia, the Local Government Board entered into communication with the medical departments of the Navy and Army in order that joint action might be taken to meet the danger. Surgeon-Captain P. W. BASSETT-SMITH, directed measures on behalf of the Navy, and Sir RONALD ROSS, consultant in malaria to the War Office, on behalf of the Army. The measures against civilian infection were directed by Lieutenant-Colonel S. P. JAMES, adviser on malaria to the Local Government Board, and Lieutenant-Colonel E. WILKINSON, late Sanitary Commission for the Punjab, medical inspector of the Local Government Board, with whom was associated a skilled entomologist, Mr. A. J. GROVE, M.Sc.

A report on malaria in England during 1917 has already been published. Quite recently another report,[1] for 1918, has been issued with an introduction by Dr. G. S. BUCHANAN, first assistant medical officer to the Local Government Board, summarising clearly the results of action taken against the risks of a spread of malaria in this country. From this report it appears that there are at least three species of anophelines, the malaria-carrying mosquitoes, to be found at present in this country, and it is stated that evidence has been found that there are a few areas in England where a mild form of true indigenous malaria still persists. Special inquiries were made into the cases of subjects who were said to have contracted malaria in England during 1917 and 1918. The total number of such cases was 330, of which 38 occurred in the Navy, 224 in the Army, and 68 in the civil population. Of the civil cases 42 occurred in 1917 and 24 in 1918; the majority in both years occurred in the county of Kent, in an area at the mouth of the Thames, including the towns of Sheerness and Queenborough. All the locally contracted malaria cases were due to infection with the benign tertian parasite, and none died. In the military malaria cases, in which the infection had been contracted in England, their source of origin was attributable to the presence in their immediate neighbourhood of relapsing cases of malaria among soldiers invalided home from the Eastern war zones. In the naval cases the origin was not in all cases so obvious, but some of them occurred in the Kent area already mentioned. Among the civilian population the origin of the cases was generally due to relapses in returned malarious soldiers; but a local outbreak in the civil population of Queenborough included cases whose illness appeared to be attributable to infection from civilians in their immediate vicinity. The clinical characters of these last-mentioned cases were less severe than those in which the infection was derived from returned soldiers, and this suggests that they were possibly due to an indigenous strain of the benign tertian parasite instead of the more virulent strain recently imported from the Eastern war areas. There is a probability that the hot weather in September of the present year may favour the breeding and development of anophelines in districts which have not as yet taken satisfactory steps to reduce the breeding-places of these mosquitoes. We understand that in 1919 both at Sheerness and Queenborough malaria cases, locally contracted, have again been reported. In the Fletton urban district, in the county of Huntingdon, not far from Peterborough, a boy who had never been out of the district is reported to have developed an attack of malaria. It is probable that other instances not recorded as yet in the press have also occurred.

The action taken by the Local Government Board to prevent the spread of malaria in the civil population seems to have been sufficiently comprehensive. Its policy was based primarily on the early detection of all malaria cases and carriers, followed by thorough treatment, protection from mosquitoes, along with special supervision and control. In selected areas this action was supplemented by anti-mosquito measures directed specially against the breeding-places of these insects. Notification of malaria was made compulsory in certain districts. Since the Armistice other measures have been added, in consultation with the Ministry of Pensions and the National Health Insurance Department, for the treatment of malaria in demobilised men. A pamphlet entitled "Suggestions for the Care of Malaria Patients," was prepared by Lieutenant-Colonel JAMES, in collaboration with Sir RONALD ROSS, and this was distributed to medical practitioners throughout the country. In January, 1919, the Local Government Board issued an Order, "Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919," which, among other things, imposed on local authorities and their officers certain new powers and duties in regard to malaria prevention. All practical assistance was given by the expert officers of the Local Government Board to medical officers of health and medical practitioners; in all cases where indigenous malaria was suspected and where no other arrangement had been made for the examination of blood films, this duty was undertaken by the experts belonging to the Board's Medical Department.

[1] Reports to the Local Government Board on Public Health and Medical Subjects, New Series, No. 123; Reports and Papers on Malaria contracted in England, 1918. H.M. Stationery Office. 1919. Pp. 51. Price 1s. 6d. net.

A Shorter Working Day.

AT the meeting of the British Association interest was manifested by a large attendance, which overstrained the accommodation provided, in the possibilities of reduction in hours of labour, with special reference to Lord LEVERHULME'S proposal of a six-hour day. The subject was introduced by Dr. H. M. VERNON, who spoke from his unique knowledge of output under different periods of employment, as ascertained by him in a variety of industries during the war on behalf of the Health of Munition Workers Committee, and since then for the Industrial Fatigue Research Board. Mr. SARGANT FLORENCE told of the work now being carried on by the National Research Council in the United States; while Professor E. L. COLLIS, Sir HUGH BELL, and Professor A. D. WALLER also presented different aspects of the case. Every social movement which affects a considerable portion of the community calls for close attention, but the present position in the industrial section of the community, which forms so large a portion of the whole, and upon which the whole is finally dependent, requires to be watched with particular interest by the medical profession. The workers are demanding and are obtaining a great reduction in their hours of labour with no reduction in their earnings. These hours have up to the present remained (except for miners) practically unaltered since 1850, when they were limited by the Factory Acts to 56½ per week for textile workers and 60 for other operatives; these limits, it is true, only apply to "protected" labour—i.e., juveniles and females—but the hours of the unprotected adult male have been largely determined by these legal limits.

Every community is alive and reacts as a living organism to the influences to which it is subjected; and its reactions are to be measured by the collective behaviour of the units of which it is composed, as indicated by vital statistics. Such records show that epidemics of disease, like influenza or plague, come and go, ruffling the waves of the advancing or receding tide of health, but not materially affecting the total rise or fall over long periods. Three main influences affect life—the air we breathe, the food we eat, the work we do. The effect of the air does not now concern us, although data are accumulating which support the contention that impurities poured into the air of great cities and industrial centres have an important and harmful influence. The importance of the food supply has long been recognised, particularly since MALTHUS early last century pointed out that increase or decrease of population followed the food-supply rather than the birth-rate; and we have just seen how food-supply has been the dominant factor in the Great War, controlling the amount of energy the belligerents had at their disposal—i.e., the amount of work they could do. But the importance of the work itself has hardly been fully appreciated; the importance upon the health of the community of modern industrial life; even though Sir JAMES PAGET laid it down that "fatigue (too much work) has a larger share in the promotion or permission of disease than any other causal condition you can name." Fewer hours of work should mean less fatigue; and the health of the nation is bound to react, though several years must elapse before the reaction can be measured. Health has reacted to the social changes brought about by the sudden advance in civilisation of the last 200 years, and more particularly of the last 80 years, which has resulted from industrial development guided by intellectual progress. The food-supply has increased and the population has increased, as MALTHUS said it should. Vital statistics indicate a diminution in our exposure to, and an increase in our capacity for resisting, the onset of disease; and in no case has this been more manifest than in the decline in mortality from tuberculosis. What reaction will follow the present movement which should eliminate much industrial fatigue?

Dr. VERNON traced the present possibilities of the six-hour day, and showed by instances taken from the iron and steel industry, and the tinplate industry, that the rate of output per worker cannot always be increased in proportion to the reduced hours. He chiefly dealt with the economic question of output, which is fundamental in the industrial world; for industry must obtain a surplus of output; that is, a greater output per working unit than that unit's requirements necessitate, if the social circulation which supplies him with materials, and absorbs his output, is to be maintained. Hours of labour and conditions of work have to be arranged to ensure this surplus of output which is wealth, the blood-stream of industry. ÆSOP'S fable of the limbs and the stomach is still a useful parable; the stomach must be fed for nourishment to reach the limbs. The constitution of the State has in the past been showing signs of greediness and of an overloading of its metaphorical stomach; dyspeptic symptoms have followed—nightmares of unrest; and somewhat unwieldy corporations have developed, while the work-a-day limbs have suffered from unequal distribution of nourishment. But if the hands go on strike and refuse to feed the stomach, they in their turn can receive no nourishment and must starve. Recently a tendency for more equal distribution has manifested itself, but for this to be maintained output must be maintained, and not only maintained but increased. Can this be effected by adopting the six-hour day? Dr. VERNON'S data show that so far as certain dexterous processes are concerned the answer is "Yes," but that in regard to the majority of automatic processes the answer is a definite "No." Modern industry has developed on a longer-day basis and has not yet organised itself to meet the requirements of an eight-hour day, even though this modification has for years been demanded by the workers. If ever the six-hour day proposed by Lord LEVERHULME is to be generally adapted—and from the point of view of health and welfare it has much in its favour—industry must have due notice. Labour-saving devices must be invented, and processes brought more under the control of the workers' own dexterity.

These things can probably be done, but not in a moment, and to-day each process must be considered on its merits. We must encourage in every way a reduction of hours by permitting multiple short shifts, which to-day are discouraged, if not rendered impossible, for protected labour by the inelastic provisions of the Factory Acts. If short shifts prove an economic success, which can only result through energetic action on the part of employers, and more especially of the workers, then industry will adopt them without compulsion, and will organise itself so that they can be introduced where to-day they could only prove an economic failure. Legal action at present should be limited to fixing some maximum period

for employment, say eight hours a day, or, better, a 48-hour week, and should leave to industry every possible latitude to work out its own salvation within this limit. The step would be a great advance, for it must be remembered there is no legal limit to-day (except for miners) to the hours of adult male labour. At some future time, in the light of experience gained, a further reduction of the maximum might be found of value to the health and wealth of the State; but in the light of present knowledge with industry organised as it is to-day there are at least three dangers in adopting a universal six-hour day: (1) health might be impaired by too little activity, for work is even more necessary to health than rest; (2) the unoccupied time might be spent unprofitably and harmfully, since the working-class population have not been accustomed to having leisure hours to devote to mental and physical recreation; and (3) surplus of output might not be obtained, when economic circulation would cease.

Marking Time in Psychiatry.

IN common with other Government departments, the Board of Control has been seriously hampered in its activities by the conditions obtaining during the war, which not only depleted its staff but also thrust upon it a number of emergency duties of a difficult and responsible character, notably in connexion with the adaptation for use as war hospitals of certain asylums under its supervision. The present report, though it appears several months after the termination of hostilities, inevitably bears traces of this preceding period of stress, and can hardly be expected, therefore, to come quite up to the standard of fullness and accuracy which may reasonably be looked for in normal times in the reports of a State authority responsible for such important duties in regard to the care and treatment of the insane. Even, however, when full allowance has been made for the difficulties of the moment, it cannot be said that the inadequacy of the Board's last report is entirely accounted for. In the first place, the statistical information which the report contains is very defective, even for a war-time publication, and it is badly arranged; there are no details as to the age distribution of patients on first admission and on recovery; there is only one meagre table showing the percentage distribution of deaths from certain causes at three different age-periods, which, in the absence of any figures indicating the age distribution of the whole asylum population, is quite useless; no particulars are given as to the assigned causation of insanity or as to the clinical forms of disease in patients admitted to care. If the omission of any reference to these latter points could be explained by scepticism on the part of the Commissioners regarding the value, in the present state of knowledge, of any attempt to classify the forms of mental disease or to distinguish their ætiological factors, it would perhaps be a comprehensible position; but in point of fact the Board has had in use for many years past a most minute and complex table of classification with an equally complex table of alleged causes of insanity, and the statistical information collected every year from all the asylums in the country has to be furnished in accordance with these schedules. If this system is too elaborate and too artificial to be of any use in practice, as may well be the case, and if it is not possible to substitute for it some provisional scheme of a simpler and less ambitious character, it should, at least, be feasible to show the statistical movement of a number of the generally recognised clinical groups of mental disease, as, for instance, general paralysis, the insanity associated with epilepsy, and the insanities of child-birth. Meanwhile the lack of information of this sort renders it the more necessary to provide statistics regarding such matters as the age at onset of attack and the age distribution of the asylum population. If space is a consideration, it would be easy to find room for the inclusion of these really important data by omitting details about trivial administrative points, such as the extension of a certificate to allow an institution to increase its accommodation by one bed, or the purchase of 3½ acres by a county asylum. Such matters, if worth recording at all, might well be relegated to an appendix; they are quite out of place in the text of the report. It is desirable to make these criticisms at the outset, because the absence of adequate statistical data imports a large element of uncertainty into the interpretation of the two main facts disclosed in the report—viz., the high death-rate amongst asylum inmates and the increase in the number of admissions to asylum care during 1918.

On Jan. 1st, 1919, the number of notified insane persons under care in England and Wales was 116,703—49,936 males and 66,767 females—showing a decrease of 9138 as compared with the number under care on the corresponding date in 1918, and a decrease of 23,763 since the beginning of the war. The number of patients placed under care last year was 21,765—10,078 men and 11,687 women. Of this number, 8835 men and 9726 women had not previously been under asylum treatment. The admissions for the year show an increase in both sexes as compared with the figures for 1917, and the number of first admissions of women is higher than any previously recorded. It should be noted that the figures do not include 3000 to 4000 patients under observation in military hospitals, many of whom will ultimately be certified. During the year 5907 patients were discharged recovered, being a percentage of recoveries to admissions of 27·14—the lowest on record. The decrease in notification has been due in the main to the abnormally high death-rate, which, calculated on the daily average number of patients, amounted last year to 19·56 per cent., as compared with 16·86 per cent. in 1917 and with 9·43 in the pre-war year 1913. This excessive mortality was the subject of a special inquiry by a committee of the Board, who reported that its main cause was the reduction in quantity and deterioration in quality of the food supplied to patients. The unpleasant impression which this statement makes will not be lessened when it is observed, from Statistical Table VI. in Part II., that the increase in the death-rate was confined to institutions receiving paupers, and did not affect the registered hospitals which deal only with private patients. Further information on this matter is clearly desirable, especially as to whether the rationing of asylum patients was scientifically adjusted to their needs as sick people. The Commissioners, as a result of their investigations, judged it necessary to make a series of suggestions to the asylum authorities, and it is

[1] Report of the Board of Control (Lunacy and Mental Deficiency) for 1918.

a little surprising to find that their first recommendation is to the effect "that patients should be weighed at least quarterly and a record kept." Is it to be inferred from this that there are institutions for the insane where patients are not periodically weighed, and that it is only after a disastrous experience of excessive rationing that the utility of such weighing is discovered? The other recommendations of the Commissioners refer mainly to precautions against the spread of communicable diseases, especially tuberculosis and dysentery, which became much more prevalent in the asylum population during the war. The measures advised are generally sound and practical, but the Board of Control can hardly be called progressive scientifically. The financial statistics reveal the interesting and illuminating fact that in the year ending March 31st, 1918, the expenditure on county and borough asylums for the insane amounted to considerably over £4,000,000, and the expenditure for scientific research in connexion with mental disease was £375.

It will be seen that the report does not give a very encouraging view of the present position of insanity in this country, and that it is likely to strengthen the growing sense of dissatisfaction with our existing methods of dealing with the insane. The very tone of the report, with its constant insistence on the purely custodial and administrative side of asylum work, points to what is amiss: it is the failure to recognise, in practice as well as in profession, that insanity is a disease which must be studied and treated in the spirit and by the methods of medical science. The reforms which the Commissioners themselves advocate, such as the establishment of clinics for mental disease in connexion with general hospitals and the amendment of the law to allow of the treatment of cases of insanity in the incipient and more curable stages, will, it may be hoped, do something to remedy the defects of the present system, but it is evident that more radical changes will be needed if psychiatry is to be freed from the influences which now impede its progress, and is to be brought into contact with the main current of medical thought and practice.

Annotations.

"Ne quid nimis."

IRISH PUBLIC HEALTH COUNCIL.

THE Chief Secretary for Ireland, acting under Section 10 of the Ministry of Health Act, 1919, has nominated the following to be the medical members of the Irish Public Health Council:—Dr. E. Coey Bigger, now Medical Commissioner to the Local Government Board for Ireland, to be chairman of the Council; Sir John W. Moore, president of the Royal Academy of Medicine of Ireland and chairman of the Public Health Committee of the General Medical Council; Dr. Robert J. Rowlette, nominated by the Irish Medical Committee and the Irish Medical Association; Dr. Alice Barry, medical superintendent of the Child Welfare Work Branch of the Women's National Health Association, nominated by the Irish Medical Committee. The non-medical nominated members of the Council are: Countess of Kenmare, chairman of the Advisory Council for Ireland of the Queen Victoria Jubilee Institute; Mrs. J. McMordie, member of the Tuberculosis Committee of the Belfast Corporation, and of the Belfast Insurance Committee; Sir James M. Gallagher, ex-Lord Mayor of Dublin and ex-chairman of the Dublin Joint Hospital Board; Mr. J. Ewing Johnston, M.R.C.V.S., president of the North of Ireland Veterinary Medical Association; Rev. P. Kerlin, C.C., nominated by the (Irish) National Association of Insurance Committees; and Mr. John Drennan, representing the approved insurance societies. It will be remembered that the Vice-President and two other Commissioners of the Local Government Board for Ireland; the chairman and two other Irish Insurance Commissioners; the Registrar-General of Births, Deaths, and Marriages in Ireland, are ex-officio members of the Council. Major George A. Harris, of the Local Government Board for Ireland, has been appointed secretary to the Council, the offices of which will be at 33, St. Stephen's Green, North Dublin. The first meeting of the new Council will be held on Thursday, Oct. 2nd.

THE RODENT MENACE.

CIVILISATION is daily teaching us that we are members one of another, and this applies especially to our failings and failures, and even to our diseases, for one carries the germ and another catches it. On the animal kingdom we are still more intimately dependent, for they frequently act as hosts to our infections during inhospitable intervals. What should we know of malaria if it was not for the mediation of the mosquito, or of plague if it was not for the rat? And the rat is becoming ever more and more suspect. In regard to protozoal parasites it has been long known to harbour the *Trypanosoma lewisi*, an apparently harmless guest. The Japanese have shown the rat to be the host of two other protozoa which, while harmless to itself, are capable of causing serious illness in man. These are the *Spirochæta icterohæmorrhagiæ* Inada and the *Sp. morsus muris* Futaki. The work of Inada, Ido, Hoki, Kaneko, and Ito, on the first-named has since been confirmed by the demonstration of rat carriers in France, Belgium, Algeria, and the United States of America. In England the presence of the specific spirochæte of hæmorrhagic jaundice in the rat was not fully proved until the investigation of Major A. G. R. Foulerton, carried out in the Hygiene Department of University College, London, and recently printed at the instance of the Public Health Department of the Corporation of London. Major Foulerton examined 101 rats caught within the City and Metropolitan area, and in 4 of them found a spirochæte which killed a guinea-pig on the twelfth day with all the characteristic appearances of spirochætal jaundice. Three of these rats were from a batch of 12 caught at a general store in the City last November; the fourth from a batch of 7 from another part of London. Dr. A. C. Coles stated in our columns[1] last year that he had found spirochætes resembling the *Sp. icterohæmorrhagiæ* in 9 out of 100 rats caught in the neighbourhood of Bournemouth, and gave excellent micro-photographs of the protozoa, but he did not proceed to confirm his results by animal inoculation. Major Foulerton discusses the method of transmission of the protozoon from rat to rat and rat to man, inclining in the first case to accidental inoculation, in the latter to the infection of food and drinking water. For the present the rat-flea has nothing to say to this matter.

In a presidential address, delivered last year before the Royal Society of New South Wales and

[1] THE LANCET, 1918, i., 468.

since reprinted and circulated, Dr. J. Burton Cleland pointed out that a town that lets its rats multiply is exposed to a menace that may lead to enormous financial losses and possibly a heavy death roll. Rats live a communal life in direct contact with each other, and thus the passage of any pathogenic organism is facilitated, while in the passage the pathogenicity of the less lethal forms is probably increased. He went on to discuss rat leprosy, which is widely distributed, though of relatively rare occurrence, its incidence among the rat population in New South Wales being much about the same as the incidence of leprosy amongst the human population. From investigations on its occurrence in rats it might be inferred that there is one diseased rat in Sydney for every 100,000 examined, whilst in New South Wales there is approximately one leper to 80,000 inhabitants. The question arises as to whether there is any possible connexion between the two diseases, whether, indeed, they are not due to the same organism. Dr. Cleland sketches the phylogenetic history of the tubercle bacillus, showing that it was originally a saprophyte, as, for instance, the acid-fast timothy-grass bacillus is still; the next stage being its accidental introduction by the alimentary canal or through wounds into the tissues of vertebrates, where it has found itself capable of living and multiplying, even though in such an unusual environment; finally, being given frequent opportunities of escape from its host through ulceration of the lungs and of introduction consequently to fresh individuals, its pathogenicity has been increased and its saprophytic qualities have been diminished or lost. The rat leprosy bacillus may, he suggests, be in somewhat the same transition stage.

These are new aspects of the rodent menace about which sufficient is known to demand the more active measures of suppression in this country. The Rats Orders of 1918 and 1919 gave local authorities the liberty to organise local campaigns. Several county councils have appointed official rat-catchers. In Leicestershire a summer campaign resulted in the death of 125,223 rats, for which a sum of £1525 was paid out. The Board of Agriculture has, in harmony with a growing habit, suggested a "rat week" for Oct. 20th–27th, in which village communities should compete one against the other in baiting, trapping, and ferreting. All this is to the good, but we doubt the attainment of the end in view so long as slack authorities are not gently urged by legislative action; for rats harried on one side of a boundary can take refuge on the other side where the human community is more lenient. We regret that Lord Aberconway's Rat Destruction Bill did not become law. It is for the Ministry of Health to devise appropriate legislative action which shall not be held up by lack of time or interest in the Chamber.

THE MEDICAL DEFENCE UNION.

THE annual general meeting of the Medical Defence Union was held in the board-room of the Public Medical Service at Leicester, under the presidency of Sir John Tweedy, when the report presented began by recording the great loss to the Union incurred by the death in April last of the general secretary, Dr. A. G. Bateman. Dr. Bateman's services were largely instrumental in safeguarding the rights, liberties, privileges, duties, and ethical obligations of medical men in their relations with each other and with the public, and the appointment of his successor, Dr. James Neal, with a long experience behind him as deputy medical secretary of the British Medical Association, promises a continuation of Dr. Bateman's activities. During the year 123 cases were referred to the Union's solicitor, Mr. W. E. Hempson, 24 being libel and slander actions, prosecuted or defended; 15 malapraxis actions, defended; 8 prosecutions of unqualified persons; 76 arbitration and personal matters. The out-of-pocket expenses for litigation amounted to £278, and the total law charges to £1136. No action conducted by the Union has been lost during the last two years. The profit and loss account for the year shows a credit balance of £2016 at the beginning and £2830 at the end of the year. The most interesting feature of the report is the record of a difference of opinion which has arisen between the Union and the General Medical Council in regard to requests addressed by the Council's acting registrar to members of the Union inquiring their reasons for refusing medical attendance in certain cases in regard to which complaint had been received by the Council. The reply of the Penal Cases Committee of the Council, justifying the Council's action, is given at length in the report. The Union takes the view that a continuance of this new procedure can only lead to a conflict between the General Medical Council and registered medical practitioners. The number of members on the register of the Union is now 8719.

THE POSOLOGY OF EMETINE.

AT a recent discussion[1] on the posology of emetine at the Société de Thérapeutique, Paris, Dr. Chauffard stated that he preferred giving subcutaneous injections of the drug as being less painful than intramuscular. He never used rectal injections, as they were liable to cause a recrudescence of dysentery. In moderately severe cases of amœbic dysentery he gave two injections daily of 3–5 cg. of emetine hydrochloride. The patient received a series of injections for from six to eight days, followed by a week to a fortnight's rest. The injections were then resumed if necessary. Dr. Dopter stated that injections of emetine might give rise to toxic symptoms, such as cardiac, digestive, and nervous disturbance, which was sometimes fatal. The toxicity of emetine was favoured by its accumulation in the system and by its slight degree of daily elimination. In practice, therefore, it was advisable not to exceed a total dose of 1 g., the daily dose being 8–10 cg. If toxic symptoms developed before the total dose of 1 g. was reached, treatment should be suspended. If several courses of emetine treatment were required for relapses of amœbiasis, before undertaking a second series it would be necessary to wait for complete elimination of the drug from the first course—i.e., 40 to 60 days. Major F. Noc advocated the following treatment of amœbic dysentery: (1) an injection of emetine in doses of 4 cg. daily for four days; (2) an intravenous injection of 0·30 g. neosalvarsan on the first or second day; (3) milk as a drink throughout the duration of treatment; (4) small doses of extract of ipecacuanha (5 or 10 cg.), in pills, three times a week; (5) one or two injections of emetine every week or fortnight, according to the frequency of relapses and the number of cysts in the stools; (6) reinjection of small doses of neosalvarsan (0·30 g.) at fairly long intervals concurrently with the injections of emetine.

[1] Bulletin de la Société de Thérap., 4e Série, xxiv., 1919, pp. 125–136.

THE IDEAL ATMOSPHERE.

THE chemistry of the air was established with some degree of certainty a good many years ago. The essential constituent, of course, for the maintenance of animal life is oxygen absorbed in the process of respiration and passed on to the tissues by way of the circulatory system. These are elementary facts. The physics of the air has only comparatively recently received promising study. It is well to remember that the chemistry of the air does not vary, while the physics of the air does considerably in ways which affect the well-being of the individual. As is well known, the great and important organ, the skin, is susceptible to the fluctuations in the physical conditions of the atmosphere. Terms such as stuffy, oppressive, heavy, thundery, fresh, bracing, are constantly used as expressing certain varying conditions of the air we continually experience, but all through these phases its chemical constitution remains the same. We may disregard the chemistry of the air, as that is assured to us as a constant in all ordinary circumstances—we are taking no regard, of course, of added impurity. The physics of the air, on the contrary, is an ever-varying factor which determines its adaptability to the physiological convenience of the individual. The progressive studies of the physical conditions of the air are rapidly modifying our views on questions of indoor warming and ventilation: these refer to the correct estimate of a healthy aerial environment independently of chemical purity or composition.

In this connexion it is interesting to recall that as far back as 1892 a Report of THE LANCET Sanitary Commission on the Ventilation of Theatres and Places of Public Assembly was published in our columns. This report referred mainly to the steps that were being taken in regard to the ventilation of the great amphitheatre of the Paris Sorbonne. The task was entrusted to an eminent architect and hygienist, M. Emile Trèlat, who had already consummated a scheme at the Vienna Opera House which had given great satisfaction. This scheme took for its ideal of well-being in regard to indoor ventilation the conditions prevailing on a fine autumnal day when the air is cold and crisp, but when the rays of the sun are still warm. M. Trèlat maintained that the colder the air the greater the internal oxidation in breathing, and therefore the greater the internal warmth. According to these views if, while breathing cold air, the body can be preserved from external cold by the radiation of heat from the sun or other sources, there follows the most healthy and the most enjoyable state of physical existence. These views receive confirmation to-day, for practically the same conclusion has been reached by Dr. Leonard Hill in his admirable series of researches on the subject. In his recent report on "The Science of Ventilation and Open Air Treatment" to the Medical Research Committee (Special Report Series, No. 32, published by His Majesty's Stationery Office), he repeats his statement that the ideal method of warming and ventilating rooms would give radiant heat, a warm floor, and agreeable movement of cool air—the conditions, he adds, of a sunny spring day out-of-doors. Except that M. Trèlat speaks of a fine autumnal day, whereas Dr. Hill speaks of a sunny spring day, these investigators appear to have arrived at the same ideals. The weather of these islands does not always approach these ideals, but the suggestion plainly is that the favourable conditions described should be imitated as nearly as possible in regard to indoor heating and ventilation. The appeal to scientific instruments for guidance in these matters has hitherto been of little value, and particularly does this apply to the ordinary thermometer, for, as Dr. Hill rightly observes, the healthy aerial environment is not a question of actual temperature, but (1) of the cooling power of the air, that depending not only on the temperature, but far more on the movement of the air; (2) the radiant energy of the sun or other source received by the skin; and (3) the drying power, depending upon humidity, movement of the air, and radiant energy received, which affects the cutaneous nerve-endings by varying the difference between the temperature of the surface and the blood temperature in the deeper layers of the skin.

Towards determining the physics of the air, particularly in regard to its cooling and evaporative power, the kata-thermometer has been devised by Dr. Hill. This is an alcohol thermometer designed primarily for the measurement of its own rate of cooling, when its temperature approximates to that of the human body. The classic wet- and dry-bulb thermometer is thus superseded where measurements in behalf of the human body are concerned, and the records given by the dry and wet kata-thermometers form a well-begun means of differentiation as to what is and what is not a healthy aerial environment. In his observations in our last issue on the hot season in Mesopotamia, Dr. F. E. Fremantle dwelt on the value of the kata-thermometer in determining the conditions under which the white man can continue to exist in tropical climes. Scientific measurements of this kind are interesting, though their lessons sometimes seem late in supporting long-established convictions. Cool, clear air has for long been accepted as most congenial to healthy respiration, but the comfort of the body needs to be sustained by artificial warmth in chilly times. The individual who shivers is miserable, and his suffering may well denote the beginning of disturbance of health.

A PROGRESSIVE MOVE.

IN the advertisement pages of this week's issue of THE LANCET appears a notice indicating an interesting departure by the authorities of the Hospital for Nervous Diseases, Maida-vale. The advertisement invites applications for the post of psychologist to the hospital, from which we assume the hospital is about to establish the nucleus of what should develop into a psychological department. From the report of the medical registrar of the hospital for the last year it appears that there is much material awaiting investigation, for of the 4000 patients treated at the hospital in 1918 nearly half are classified as suffering from functional nervous disorders. Apart from the treatment of these patients and the opportunity for original work, much can be done for many of the patients who are classified as suffering from organic nervous disease, but who also show faulty mental adjustment, and the appointment of a psychologist displays the intention to place the facilities of the hospital at the disposal of those competent to carry out original investigation in psychotherapy.

TUBERCULOUS INFECTION IN SCHOOL CHILDREN.

Dr. Alexander Arnfinsen[1] has tested 80 school children between 6 and 18 years of age at Trondhjem, in Norway, with von Pirquet's reaction, and found that it was positive in only 37·8 per cent. Although Trondhjem is an old city, tuberculosis until comparatively recently was almost unknown there. The surrounding country, from which the city partly draws its population, had been relatively protected from infection up to 1850, when the construction of railways and good highroads brought about a change in the situation. In spite of the low percentage of the tuberculin test, the mortality from tuberculosis is higher at Trondhjem than in other Norwegian cities. The writer, therefore, suggests that the greater the dissemination of tuberculous infection the lower is the mortality from the disease owing to the population having acquired a relative immunity. The state of nutrition of the children is very good, probably owing to the fact that 82 per cent. had been breast-fed up to the age of 3 months or more. Children from tuberculous homes showed a positive cuti-reaction in 68 and 64 per cent. for boys and girls respectively.

PERFORATION OF THE LUNG A SEQUEL OF PERFORATION OF THE STOMACH.

IN the *American Journal of the Medical Sciences* for August Dr. J. Friedenwald has reported a very rare sequel of gastric perforation—subphrenic abscess perforating through the lung. A man, aged 51 years, was seen in consultation. He complained of gastric symptoms for 35 years, mainly fullness after meals and belching. For the past eight or ten years there were periodic attacks lasting three or four weeks to several months, characterised by pain in the stomach appearing two hours after meals, and relieved by soda and rest. Pyrosis and hunger pain frequently occurred. He vomited at times, but there was no history of hæmatemesis or melæna. After an attack lasting some weeks he was seized with agonising pain in the upper abdomen requiring injections of morphine. The abdomen was distended and there was a tender epigastric area. Next day there was dull pain in the left kidney region which radiated towards the epigastrium. The pain lasted ten days, and was accompanied by a temperature ranging from 101° to 103° F. Cough and hiccough developed and purulent expectoration followed. During the first day he expectorated about a quart of pus. When the expectoration began the temperature and pain diminished. He was admitted to hospital. On examination he was thin and pale. The tongue was coated, and there was marked pyorrhœa alveolaris. In the chest only some impairment of the percussion note in the region of the right scapula could be detected. Auscultation was negative. The abdomen was somewhat distended, and the recti were spastic. There was a tender area in the epigastrium and left lumbar region, over which was a burn caused by hot applications. The liver extended a finger-breadth below the costal margin. X ray examination showed a high stomach with rapid expulsion and defect at the pyloro-duodenal junction (revealing an ulcer), dilatation of the bronchi, and cloudy infiltration below the right clavicle. The temperature was 100°. On the first day in hospital he expectorated about a pint of pus. The expectoration rapidly diminished and ceased in a week. The pus was creamy and of a putrid odour. It contained colon bacilli and streptococci in abundance. Recovery quickly took place. Evidently the attack of abdominal pain indicated gastric perforation, which was followed by subphrenic abscess, and finally by perforation of the lung. The complete evacuation of the abscess led to recovery. In gastric perforation producing subphrenic abscess the pus usually accumulates rapidly and the symptoms are very acute. There is often sudden severe pain in the epigastrium or hypochondrium radiating to the shoulders with dyspnœa due to pressure on the diaphragm. There are usually vomiting, hiccough and weakness, and acceleration of the pulse. Fever, with chills and sweating, is not uncommon. Dr. Friedenwald could find recorded only four cases—all German—in which perforation of a gastric ulcer was followed by rupture through the lung.

[1] Norsk Magazin for Laegevidenskaben, 1919, lxxx., 508-530.

INTELLIGENCE TESTS.

IT was announced some months ago that the authorities of Columbia College, New York, had resolved to replace their matriculation examination from July last by a series of psychological tests for the selection of those candidates for admission who could profit most by a University course of study. For many years past the utility of special mental tests has been gaining increasing recognition. Their value was finally established during the war, and nowhere so conclusively as in the United States Army, in which they were applied to about one and a half million recruits. A brief report of the methods adopted for measuring intelligence by these Army mental tests has now been issued from the Government Press, Washington, showing also some of the results obtained and the practical applications secured. Men of too low-grade intelligence were rejected, while those of superior intelligence were considered for advancement, the most suitable being selected for special training or for specific Army duties. On the basis of these tests endeavours were made to provide each unit (save in certain arms of the Service) with its proportion of superior, average, and inferior men, instead of leaving the proportion to chance. In this way were formed units of uniform mental strength which could be trained at a uniform rate. Intelligence, of course, is only one of the factors in military efficiency, but it is probably the most important single factor. The results obtained from intelligence tests and from other mental tests by the United States Army and by our own Admiralty during the war are clear indications of their future value in the work of human selection and vocational guidance.

ANTHROPOLOGY AS AN IMPERIAL STUDY.

THE Mackie Anthropological Expedition to Uganda, postponed for obvious reasons on the outbreak of the war, is now to get to work. Under the direction of the Royal Society, the mission will be in the personal charge of the Rev. John Roscoe, whose thorough acquaintance with the subject and long residence in Uganda as a missionary, constitute exceptional qualifications. The original idea was that the Colonial Office should finance the scheme, but Mr. Lewis Harcourt, upon full consideration, did not concur. Accordingly, Mr. P. Jeffrey Mackie, of

Glenreasdell, a well-known Scotch distiller, was approached and he undertook to defray the entire cost. We hope that the results of his generosity will provide a valuable contribution to our knowledge upon a subject hitherto unduly neglected. Anthropological study is of particular importance to the British Empire, to which has fallen the charge of so great and various a collection of the human race. The expedition could not be in better hands than those of Mr. Roscoe, lecturer to the University of Cambridge in African Anthropology, and author of an authoritative work on the folk-lore of the Baganda.

THE OPENING OF THE WINTER SESSION.

A WELCOME sign of the return to more normal conditions of life is the renewed foregathering of past and present members of London medical schools at the commencement of the winter session. The social dinners which one by one have been dropped during the war are again to take place, and will bring together for the first time men and women whose medical duties have taken them to the ends of the earth, and given them, in a brief year, more than the normal experience of a life-time. Some of the London schools of medicine are, as usual, giving their newcomers the opportunity of hearing the stimulating experience of veterans in the profession.

Dr. Wilfrid Ombler Meek died with tragic suddenness on Sept. 14th at the Brompton Hospital Sanatorium, Frimley, where he had long been resident medical officer. He was in his fortieth year.

THE inaugural sessional address at the Pharmaceutical Society of Great Britain will be given on Wednesday, Oct. 1st, at 3 P.M., by Mr. W. J. Uglow Woolcock, M.P., at the School of Pharmacy, 17, Bloomsbury-square, London, W.C.

UNIVERSITY OF LONDON: LECTURES IN ADVANCED PHYSIOLOGY, 1919-1920.—The following are recognised as advanced lectures which a candidate at the B.Sc. Honours examination may name for part of his examination. *King's College*, 1st term:—Dr. Da Fano: Histology of the Nervous System. Ten lectures at 4.30 P.M. on Tuesdays, beginning Oct. 7th. *King's College for Women*, 3rd term:—Dr. E. Mellanby: Nutrition. Eight lectures at 5 P.M. on Mondays and Wednesdays. *St. Bartholomew's Hospital*, 2nd term:—Mr. J. W. Trevan: The Reaction of the Blood and Acidosis. Eight lectures at 4.30 P.M., on Wednesdays. *Guy's Hospital*, 2nd term:—Dr. M. S. Pembrey and Dr. J. H. Ryffel: The Regulation of Respiration. Eight lectures at 4.30 P.M. on Thursdays. The precise dates of delivery will be announced later, as will also the place of delivery of the following: 2nd term:—Mr. W. L. Symes: Physiologically Balanced Solutions. Eight lectures at 5 P.M. on Tuesdays. 3rd term:—Mr. J. A. Gardner: The Bio-chemistry of Sterols. Eight lectures at 5 P.M. on Tuesdays. At the Imperial College of Science and Technology during the 1st term Professor A. D. Waller will deal with the Energy Balance of the Human Body and Electrical Signs of Emotive Phenomena at 5 P.M. on Wednesdays, beginning on Oct. 15th, but these lectures do not count for examination. Intercollegiate courses also approved for the Honours B.Sc. examination will be delivered at University College during the 1st term by Professor Bayliss on Physical Chemistry in Relation to Physiology; and during the 3rd term, at King's College, by Professor Halliburton and Dr. Rosenheim, on Advanced Chemical Physiology; at Bedford College, on Advanced Practical Histology; at St. Bartholomew's Hospital, by Professor F. A. Bainbridge, on Electrical Changes on Skeletal and Cardiac Muscle (practical work); and during the 2nd term at Guy's Hospital, on Practical Work on Respiration. Further information may be obtained from the heads of the laboratories in which the lectures are given, and in the case of courses by Professor Waller, Mr. Gardner, and Mr. Symes, from Professor Waller, Physiological Laboratory, University of London, South Kensington, S.W. 7.

THE INDUSTRIAL EMPLOYMENT OF MOTHERS:

FRENCH AND GERMAN EXPERIENCES.

AN account has been given of the steps which were taken during the war for protecting the welfare of the children of women employed in factories in France and Germany in a report which was issued a short time ago, and which was prepared in the Intelligence Department of the Local Government Board. The infant welfare work which has been done in these countries is suggestive. A short description of it may be useful so as to enable a comparison to be made with similar work in England.

France.

In France, as in this country, women were extensively employed in factories and on munition work, and attention was aroused to the dangers of such employment for the health of the mothers and infants. Statistics compiled from the weekly bulletins of municipal statistics for Paris showed that during the second year of the war, as compared with the first, there was an increase in the percentage of stillbirths and cases of maternal mortality, and in the number of abandoned infants. The number of premature births had also increased. There was a vigorous discussion on the subject in the Academy of Medicine in December, 1916, as an outcome of which a committee was appointed to consider the matter. The resolutions which were passed were strongly supported by the Ministry of Labour, the Ministry of the Interior, and the Ministry of Munitions. The need was emphasised for the compulsory establishment, in every war factory where women were employed, of a nursing room furnished with cradles and reserved exclusively for breast-fed infants. It was held that the mothers should be allowed to attend to their infants during working hours without any loss of wages. They should be employed on day shifts only. There should be, in addition, a creche for artificially-fed infants and a day nursery for children up to 4 years of age attached to each factory, or to a group of factories, and in factories where a number of women were employed a welfare supervisor should be appointed, whose duties and functions should be similar to those of welfare workers in English factories.

The vital need for breast-feeding was so well recognised that in August, 1917, a law was passed under which certain amendments were made in and clauses added to the second book of the Industrial Code. These clauses provided that two periods of 30 minutes each were to be allowed during working hours, and in addition to the usual rest-periods, to nursing mothers to breast-feed their infants up to 1 year of age, and they were to be allowed to attend to their infants on the premises. Whether this law was complied with was a debated point. M. Pinard reported to the Academy of Medicine that the effect was nil and that the measures for the protection of expectant mothers existed only "on paper."

The need for creches and day nurseries for the children of women workers was also recognised. In 1897 the creche was legally defined as "an establishment for the hygienic and moral care of infants until they have reached their third year." Creches might be opened only on the authorisation of the prefect, and were to be subject to inspection by persons appointed for the purpose, either by the Minister of the Interior or by the prefect. A report on the working of the creche, and a medical report, had to be submitted to the prefect each year, and he had power to order a creche to be closed if he considered the arrangements defective. Later in the same year it was made obligatory for every creche to be supervised by a doctor; and no infant could be received at a creche without a medical certificate showing that it was free from infectious disease. During the war the creches in France have had to contend with many difficulties and anxieties, among which were scarcity of milk, high price of food and coal, lack of funds, difficulties in arranging for medical supervision owing to the mobilisation of so many of the doctors, and difficulties in finding a working staff which was adequate in number and competence. In various industrial regions, however, creches were established in connexion with a factory or group of factories, to a very large extent by the employers themselves. Among those specially mentioned in the report are Messrs. Schneider at

Creusot, the Chattillon-Commentry Works at Montluçon, the "Comité des Forges"—a federation of nearly 60 employers' associations representative of the metal, electrical, mechanical construction, railway material, and other industries—and other employers in Basse Indre, Saint Etienne, in the india-rubber industry of Auvergne, Clermont, Thiers, and the neighbouring district. A group of firms formed an association at Levallois Perret and Neuilly, and erected a model building, the cost of the building being met by the employers themselves. Similar measures were carried out elsewhere. The manner in which the employers have organised and assisted in providing these institutions is remarkable.

The creches receive grants from the State, Department, or Municipality, from two, or even from all three; some, however, receive no grant from public funds. In many creches a small charge is made to the mothers for each child cared for, more as a matter of principle than for the money obtained. Children of 2 years of age can be sent to infant schools or cared for in day nurseries (garderies). A day nursery becomes an infant school if any instruction is given, and is subject to inspection by the education authority, and becomes a creche if children under 2 years are admitted.

The French working woman appears to be more prejudiced than her English sister where creches and similar institutions are concerned, preferring, in many cases, to leave her children with foster-mothers. Some think the infants would thus be better cared for, others regard it as more respectable to leave their children with neighbours than take them to a free creche.

French women have long been accustomed, as a rule, to send their children to be cared for in country villages by foster mothers, often arranging for them to be breast-fed. The mortality among these children was at one time extremely high, and for their protection in 1874 the "Loi Roussel" was passed, which, among other provisions, stipulated that a record should be kept of all facts connected with the boarding-out of infants, and that the children should be examined medically from time to time. It was realised, however, that the protection afforded by this law was not sufficient, and infant welfare consultations were set up in a number of Departments to which foster-mothers were encouraged to bring children under their care for medical supervision, advice, and help. In the Department of Seine et Oise there were in 1914 nearly 100 consultations. In 1917 a report for this department stated that of 4893 infants attending only 192 died before reaching 1 year of age—a mortality rate of 39 per 1000, the general infant mortality rate for the department in 1916 being 67 per 1000, as compared with 73 per 1000 in 1913. In estimating the value of these consultations it should be realised that, where attendance is voluntary, the best mothers and foster-mothers attend in greater numbers than others, and among their children, or the children in their care, the infant mortality-rate would naturally be lower than the general infant mortality-rate of the Department.

Germany.

The infants of mothers working in factories in Germany have usually been cared for in creches or infants' homes and the children below school age in day nurseries, whilst for children of school age "day shelters" were provided where they could spend their free time until their mothers returned from work. During the war the number of creches and day nurseries greatly increased. Many were carried on by municipal authorities, and creche associations and other organised bodies made considerable efforts to extend the existing accommodation and open new creches. In many cases it was found necessary to open the creches earlier and close them later, and often to keep them open all night. Among the many difficulties experienced were the scarcity of food, soaps, and rubber teats. At the end of 1916 the "Central Office for Women's Employment" was set up within the War Bureau and placed under the direction of an experienced medical woman. Amongst the duties attached to the office was that of suggesting and carrying out measures for the protection and well-being of the women, and of seeing that the children did not suffer on account of the employment of their mothers.

The large associations interested in welfare work among women and children were appealed to, and in January, 1917, was formed the "National Committee for Women's War Work," which, together with the "Central Office for Women's Employment" and various local committees, was responsible for much of the welfare work which was carried out during the war. In Germany the general feeling appeared to be in favour of boarding-out the children in suitable foster homes rather than of placing them in institutions. The creches, day nurseries, and day shelters received financial support from (1) private contributions; (2) payments by mothers; (3) municipal grants (many creches being supported entirely by municipalities, who in their turn received Imperial and State aid); (4) Imperial funds (half to two-thirds of any expenditure on war relief); (5) State aid; (6) State insurance institutions, &c. (fire insurance societies have contributed on the ground that children left at home without supervision are frequently the cause of fires); and (7) contributions from employers. Under the Imperial Industrial Law women workers in factories were forbidden to work on night shifts, their working day was limited to ten hours, and they could not be employed for a fortnight before or six weeks after confinement. By an emergency law of August 4th, 1914, the Imperial Chancellor was given power to suspend some of the provisions of the industrial law, among others those relating to women's labour. The result appears to have been very serious, long hours, and night shifts becoming general, and in some cases it was stated that women were being kept at work in factories for 24 hours at a stretch, and in mines for 36 hours, without a proper rest. Representations to the Government seem merely to have called forth circulars from the War Bureau at intervals in 1917, urging the responsible officials in various districts to do all they could to bring about improvements. The condition of women workers appears to have been much worse in Germany than either in France or England.

The original report contains an immense amount of information and a wealth of detail, and is well worth careful study.

SCHOOL MEDICAL INSPECTION, 1918.

BIRMINGHAM—BRISTOL—HULL—LIVERPOOL—NOTTINGHAM—SHEFFIELD.

FOR the city of *Birmingham* the report of the medical officer dealing with health conditions in schools is very brief, owing to conditions connected with the war. The total number of children medically examined was 35,269; 2314 were treated for scabies and 1021 for throat affections (enlarged tonsils and adenoids). A school for physically defective children and an open-air school at Uffculme have been carried on with much benefit to the children admitted. Dr. Lewis Graham alludes in his report to the important results likely to be obtained in the nursery schools, for the accommodation of children between 2 and 5 years of age, that are to be established according to Section 19 of the Education Act (1918). It is stated that "the number of children reported as necessitous and in need of food" decreased during 1918. Actual ratios of malnutrition are not supplied. Considering the circumstances of the times this is to be regretted.

At *Bristol* the work has been considerably interfered with by changes in the medical staff, due to the war; school attendance was also interrupted by an outbreak of influenza in October and November. On the other hand, by an augmentation of the nursing staff more frequent supervision in the schools, and a better following up of the children at their homes has become possible. A new central clinic has been opened, which is stated to be a great improvement on former arrangements. Routine inspection of infants had to be given up, only special cases of "ailing children" brought forward by the head teachers being examined. The total number examined in the code groups (intermediate and leavers) was 9121. The nutrition of the children appears to have been satisfactory; only 0·11 per cent. were considered to be actually badly nourished, and 3·43 per cent. "below normal." The clothing and footgear were also satisfactory in all except 1·32 per cent. for the former and 1·86 for the latter. Cleanliness was satisfactory in 98·95 per cent. for the body, and 96·70 per cent. for the head. A new clinic has been opened for minor ailments in Portland-square, which has already proved to be of great benefit, 27,109 attendances having been recorded during the year. Dr. Percy Stocks, the

acting school medical officer, draws attention to the prevalence of tuberculosis, of which 503 cases among school children had been treated during the year at the Tuberculosis Dispensary, 410 being pulmonary; the proportion found at the routine inspection was 0·72 per cent., the lungs being affected in 0·69 per cent.; an increase in open-air school accommodation is recommended, and measures are now being taken to carry this out. Open-air classes where practicable, summer camps, and organisation of boy scout troops in connexion with the schools are other excellent recommendations. The only epidemic prevalence of importance was that of influenza; 70 cases were fatal. Scabies was diagnosed in only 10 children at the routine examinations (0·11 per cent.), but 491 other children of various ages were found to be suffering from the disease and were treated at the clinics; in 1915 there had been only 53 cases altogether. Impetigo also increased from 228 cases treated in 1915 to 752 cases in 1918.

At *Hull* the number of children examined in the code groups was 9769; the nutrition is considered to have been "extremely satisfactory," 0·26 per cent. only having been classed as "bad" and 11·24 per cent. as below normal. These figures should be compared with those of 1913, just before the war, when 0·27 per cent. were found to be badly nourished and 14·12 below normal. Dinners were provided according to an excellent diet table; on account of the coupon difficulty no meat was given, but a menu of soup, suet pudding, lentil pie, &c., gave a daily average of proteid 0·6 oz., fat 1·6 oz., and carbohydrate 3·3 oz. per head. The education committee now provide spectacles for any child that requires them if they have not been obtained within three months of the examination when the eyesight was found to be defective; in the case of necessitous parents no charge is made, in other cases the cost is recovered. A large number of cases (541) of ringworm of the scalp were treated, a considerable increase on the number (317) in the previous year; 398 children were cured, with an average treatment through ten weeks (if the attendance was regular). A great increase of scabies has occurred; in 1914 there were 296 cases, in 1917 there were 1056, and in 1918, 1442 cases; the average period of absence from this cause was 8·5 weeks; the interference with education is obvious. Disinfection of the houses and bedding has been carried out, but there is no power to insist on the treatment of any person over school age, and, of course, reinfection occurs. Pulmonary tuberculosis was found in 16, and suspected in 61 children in the three code groups; in addition 21 children specially examined were considered to be positively affected, and 77 others were suspected to be suffering from the disease. Two epidemics of influenza occurred in 1918, one in June and July, the second (more severe) in October and November, causing great disturbance of school work. Dr. James Fraser, the school medical officer, does not consider school closure to be of use in limiting spread of the disease.

The work of medical inspection in *Liverpool* schools was considerably interfered with by a severe outbreak of influenza in the autumn, necessitating school closure for four weeks; medical treatment was only slightly interrupted. The total number of children examined in the code groups was 24,252. Actual malnutrition was only present in 0·132 per cent.; in 0·334 per cent. the child's nutrition was not satisfactory, without being actually in need of treatment. Scabies is stated to have been very prevalent (1179 cases, as compared with 512 in 1916 and 851 in 1917, p. 5 of report; in Table II., p. 17, it is stated that 44 cases were found among the code-group children and 49 among those specially examined); the need for suitable facilities for treatment is urgent. Baths and disinfectants are required. "Approximately 500 children were away from school at the end of the year with this disease. ..... The gain in increased Government grant would probably more than make up for the cost of installation and administrative expenses of the special centre or centres." Arrangements were made for the special inspection of children absent from school for a long time, such as cases of ringworm, of phthisis or other tuberculous infection, &c. 3988 children were examined, of whom 1111 were found fit to attend school. With regard to operation for adenoids and enlarged tonsils, Dr. E. W. Hope, who presents this report, notes that in 37 cases (4 per cent.) hæmorrhage occurred, and in 11 instances it was necessary to keep the children at the clinic for two nights instead of one. "Experience has proved the desirability of not allowing any children to return home until the following day, as it is quite impossible to forecast which children, if any, are likely to suffer from hæmorrhage or collapse." This is a very wise precaution, not always adopted. Two outbreaks of influenza during the year made the closing of several schools necessary—16 in July, 27 in September; and at the beginning of October all the elementary schools in the city were closed for a month.

In an introductory letter to the education committee of the corporation of *Nottingham*, Dr. Philip Boobbyer, the medical officer of health for the city and superintendent medical officer of schools, refers to the need for radical improvement in the conditions of life of the industrial classes, especially in the densely populated urban districts, which has been brought home to everyone by the large proportion of men of military age who have been found unfit for military service. This is largely the result of heredity, but improvements in the conditions of the working classes in our great cities are more practicable at the present time than any attempt at restrictions on matrimony for eugenic reasons. The provision of better dwellings is of the first importance, and as regards the elementary school child the open-air schools have done excellent service. The number of children inspected in the code groups was 5137, all entrants, no leavers being examined. This was on account of ill-health of the staff, the prevalence of epidemic disease, and school closure for various reasons; but a large number of other children (7255) were examined as special cases at the clinics. Malnutrition was present in 132 cases (2·56 per cent.), and in addition 2·10 per cent. were not considered satisfactory in this respect. Scabies was not excessively prevalent (58 cases, 1·12 per cent.) in the children of the age-group examined, but altogether 843 children were under treatment, of whom 72 per cent. were cured. Dr. E. M. Wyche, the senior school medical officer, refers to the difficulties attending treatment, and the immense loss of school time involved, chiefly owing to repeated reinfection at the home. The matter is of serious importance: the total number of children excluded school for all causes during 1918 was 1650, with a loss of 83,369 school days. 841 of these children were excluded for scabies, and 39,652 actual school days were lost for this reason, involving a loss of £413 attendance grant. This is an excellent use of the *argumentum ad crumenam*, which might well be applied to the negligent parents. Ringworm has been most successfully treated by the education committee's X ray department, 192 children having been treated during the year without a single failure: radiant heat has been used to restore the growth of the hair, also for alopecia areata. Open-air education is carried on in several of the recreation grounds and open spaces in the city, and seven open-air class rooms have been erected for specially selected delicate children. The work of medical inspection, treatment, and after-care, is evidently carried out with great thoroughness and enthusiasm in the city of Nottingham.

Owing to the absence of 12 medical officers on military service routine medical inspection was suspended in *Sheffield* during 1918, but 16,956 "selected cases" were examined in school, as well as over 25,000 at the various clinics. Malnutrition was only found in 28 children, and in six others the nutrition was not satisfactory. Dr. Thomas Chetwood, the school medical officer, referring to this question of nutrition, states that during 1918 there was a decided improvement, as shown by the weights of the children (taken regularly every six months). The total number of dinners and breakfasts served at the feeding and school centres was 89,733, being a decrease of 54,474 on the number provided in 1917. Scabies is reported in 2304 children. The method of treatment is described by Dr. E. F. Skinner. It was extremely thorough and yet simple. The parent is instructed to attend at the cleansing station at a fixed time and to bring a set of clean underclothing (in addition to the clothes worn by the child). The child is undressed, and both sets of clothing submitted to steam sterilisation for an hour while the child is being treated. After rubbing down with soft soap the child is placed in the bath for 20 minutes and well rubbed with a loofah; after the bath the skin is rubbed with sulphur ointment, the cleansed and sterilised clothing, powdered with sulphur, is put on, and the child leaves, taking another set of sterile clothes with it. Printed instructions and sulphur ointment and powder are given to the parent, who is told to repeat the process each day. The children are seen by the doctor at

the end of a week, and, if fit, are sent back to school. "The treatment is simple, and its efficiency has been abundantly proved by this year's experience. ..... The average time of exclusion is only 11·98 days." With ordinary treatment at home with ointment, the average absence has been 56 days. The secret of successful treatment is to take all the infected children in a family at the same time, but a large measure of success depends on the efficacy of the rubbing.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations (Scotland), 1919.

THIS Order is closely similar to that issued in February last by the English Local Government Board.[1] It makes notifiable all cases of malaria, dysentery, trench fever, acute primary pneumonia, and acute influenzal pneumonia. Notification is not required in cases of malaria, dysentery, or trench fever, which to the practitioner's knowledge have been already notified within the preceding six months. The medical officer of health for the district, on receiving the notification, is to take any necessary steps to prevent the spread of the disease. He is to forward to the Board the name and address of the patient in cases of (*a*) trench fever; (*b*) malaria, where the infection was apparently contracted in this country; and (*c*) dysentery. The Order proceeds:—

Malaria.—The M.O.H. is to take steps to see that the person affected is supplied with efficient mosquito netting, receives necessary quinine treatment, receives proper advice as to the continuation of quinine treatment in order to prevent relapses, and advice as to precautions to prevent the spread of infection. On the occurrence of two or more cases in a district where the disease appears to have been locally contracted the local authority may, and if required by the Board shall, appoint and pay an approved medical practitioner to make systematic visits to houses where the disease has occurred, and offer to examine therein persons suspected of being infected with malaria, examining the blood, and further making certain that proper treatment and preventive measures are being carried out.

Dysentery.—The M.O.H. may give notice in writing that until further written notice the person specified shall discontinue any occupation connected with the preparation or handling of food or drink for human consumption, that children of or in the care of the said person shall not be sent to school, and that certain specified measures are taken for the destruction of excreta and prevention of infection. If the M.O.H. suspects that any person employed in the preparation or handling of food or drink for human consumption is a carrier of dysentery he may give notice in writing to the manager of the trade or business concerned, certifying that for prevention of the spread of disease he considers it necessary to make a clinical examination of such suspected person, and the manager and all other persons concerned shall give to the M.O.H. all reasonable assistance. If the suspected person be found to be a dysentery carrier notice may be given to the person and to the manager of the trade or business, with a view to preventing the employment of the said person in that or any other business concerned with the preparation or handling of human food for a specified period.

Trench fever.—Special measures are to be taken for the destruction of lice, and inmates of the house may be temporarily segregated until their clothing has been completely freed from vermin.

In the case of enteric fever the regulations are the same as for dysentery. Where typhus fever or relapsing fever is found, the names of infected persons are to be transmitted to the Board, and the same measures for the destruction of lice as in trench fever are applicable. Expenses incurred by the Medical Officer of Health are to be defrayed by the local authority concerned, and they may also provide medical assistance where necessary in cases of the diseases specified.

Organised Health in Edinburgh.

Some extremely interesting facts and figures are contained in a report prepared by Councillor J. A. Young, L.D.S., convenor of the Public Health Committee of Edinburgh Town Council, on the progress of health administration in the city. The first record available regarding public health work is dated 1812–13, when the Police Commissioners undertook the scavenging of the city, the watering of the streets, and the building and maintenance of public conveniences. The cholera epidemics in the early part of the century seem to have been dealt with by voluntary workers in special hospitals, but it was not until the outbreak of 1866 that a hospital was provided at public expense. There was not until 1870 any public provision for the treatment of infectious diseases, and at that date it was only furnished for cases of small-pox. The late Sir Henry Littlejohn was appointed medical officer of health in 1862, and immediately undertook a thorough survey of the sanitation of the city. His report was published in 1865, and taking the figures for 1863, it gives a picture of the actual condition of affairs at the time of the formation of the department. In 1861 the population of the city was 170,444, and the death-rate 25·88 per 1000; in 1911 the figures were 320,829 and 14·39 respectively, this reduction in the death-rate being equivalent to the saving of 3673 lives per annum on the increased population. Deaths under 5 years of age show an enormous reduction, from 93·29 per 1000 living in 1863 to 33·6 per 1000 in 1913. In 1863 the death-rate from zymotic diseases was equal to 6·23 per 1000; in 1913 to 0·87; many of the diseases then chiefly responsible—cholera, typhus, &c.—have now practically disappeared. The phthisis death-rate in 1863 was 2·54 per 1000; in 1913 the figure was 1·13. The general sanitary condition of the city shows corresponding improvement. In 1863 the most densely crowded district had a population of 646 persons per acre; the highest figure at the present day being 343. The internal condition of the tenements in 1863 was in many instances appalling. Sir Henry Littlejohn mentions one known as Middle Mealmarket Stair, in which 248 persons were housed, and which was unprovided with sink or water-closet. Of 171 cow-byres then existing, 110 were below human dwellings, and many of them filthy and overcrowded, with the cows dying off from pleuro-pneumonia. A comparison of the finance of the department shows an average expenditure for the last nine years of £36,778, as compared with an average for the ten years to 1889 of £5365.

Edinburgh Royal Infirmary: Retirement of Professor William Russell and Dr. Graham Brown.

At the meeting of managers held on Sept. 8th special minutes were passed expressing regret at the retirement of Professor William Russell and Dr. Graham Brown, and placing on record the valuable services which these gentlemen have rendered to the institution. Professor Russell first became a member of the staff in 1888, when he was appointed pathologist to the infirmary, a position which he held for four years. In 1891 he became assistant physician, and in 1907 full physician in charge of wards. In 1913 he was appointed by the University the first occupant of the Moncrieff-Arnott chair of Clinical Medicine. In all these positions he performed his duties with efficiency and zeal, and in consideration of his eminent services the managers of the Royal Infirmary have appointed him a consulting physician to the institution. Professor Russell's successor as Moncrieff-Arnott professor of Clinical Medicine is Dr. F. D. Boyd, whose appointment has been previously announced. Dr. Graham Brown was appointed assistant physician to the infirmary in 1897, and full physician in 1912. He has also held the position of lecturer on neurology in the University for a number of years, and is well known for his special ability in this branch of medicine. In recognition of his services to the institution Dr. Graham Brown was appointed a consulting physician to the Royal Infirmary.

Criminal or Spontaneous Abortion?

On Sept. 9th and 10th, in the High Court of Justiciary at Edinburgh, a woman was tried for causing the death of a young clerkess by performing an illegal operation. The case is of interest from the fact that the deceased, who was about four months' pregnant, had placenta prævia, and also because of the absence of any wound of the private parts, and the assertion of the Crown that the attempted abortion had been made by means of an injection into the womb from a Higginson's syringe. At the post-mortem, made by Professor Littlejohn and Dr. Haig Ferguson, there was found dilatation of the os and cervix, absence of the usual plug of mucus in the cervix, and partial detachment of the placenta around the internal os. There was evidence of considerable loss of blood, and the medical witnesses ascribed death to hæmorrhage and shock. All the internal organs were healthy, and no other conditions to account for death were found. The deceased went by arrangement to the house of the prisoner one evening about 5.30; she was then in good health, and there was no history of previous illness or hæmorrhage. She was quite well at 9 P.M. except for slight sickness, alleged to be due to some strawberries and cream which she had eaten a short time earlier. At 9 P.M. deceased went to bed and the prisoner spent a quarter of an hour with her alone.

[1] THE LANCET, 1919, i., 303, 399.

The young woman then became ill, vomited, and was collapsed, and died about 11 P.M. A Higginson's syringe in a basin of water was seen in the room immediately after the prisoner had been with her. Three obstetricians who appeared for the defence contended that the appearances were quite consistent with impending spontaneous abortion. The jury unanimously found the prisoner guilty of culpable homicide and she was sentenced to five years' penal servitude.

Sept. 15th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Health Department of Canada.

THE Hon. Newton W. Rowell has been placed in charge of the organisation of Canada's Department of Health, authorised by special legislation at the last session of Parliament. Dr. John Amyot, who has been appointed Deputy Minister, was formerly professor of hygiene and public medicine in the University of Toronto. The new department is taking over from other departments of Government administration those branches which concern the health of the people, such as quarantine, marine hospitals, the health of the Indians. Immigration was the first to be brought over to the new department. The question of coöperation with the various boards of health of the different provinces is claiming the particular attention of the Deputy Minister with a view to coöperation in the campaign against venereal diseases. The policy of the department will be shortly announced to the public.

Hospitals in Montreal and Toronto.

A number of citizens have become interested in a new hospital scheme for Montreal. It is to be known as the St. Mary's Memorial Hospital, and is to perpetuate the memory of relatives who lost their lives in the Great War. The hospital will be open to all classes and creeds in the community. An appeal for funds will be made in October. Many Montreal families have already promised to endow beds. Montreal is in great need of enlarged hospital accommodation.

Mr. William Ramsay, formerly a Toronto wholesale merchant and director of many commercial concerns, died recently in Scotland. He left over half a million dollars to Toronto charities—the General Hospital, $10,000 a year; Home for incurables, $5,000.

Public Welfare in Alberta.

The Department of Public Health of Alberta province, under the responsible Minister, Hon. A. G. Mackay, and Deputy Minister, Dr. J. T. Norman, has recently been given power by the Legislature to prevent, mitigate, or suppress disease. It can deal with all epidemics, and, if necessary, order, in the case of small-pox, general vaccination of all communities affected. It is handling the venereal diseases problems, and it is seeing that the provisions of the Provincial Health Act are applied when necessary.

The war being over, the Canadian Public Health Association is showing signs of new life. Dr. H. E. Young, secretary of the Provincial Board of Health of British Columbia, was elected president at the last annual meeting, held for the present year in Toronto. Edmonton, Alberta, was chosen as the place of meeting in 1920. Alberta has more trouble in health matters with the 33·6 per cent. foreign-born population than with the remaining 66·4 per cent. British-born, owing to the foreigners holding to their traditions and refusing to adopt up-to-date methods in vogue in Canada.

Toronto, Sept. 1st.

EDUCATIONAL GRANTS FOR EX-SERVICE MEN.—Under the Government scheme of financial assistance for the higher education of ex-Service officers and men the total number of grants awarded by the Board of Education now amounts to 9500, including 4000 officers and 5500 men. The courses in respect of which grants have been awarded include more than 2500 for engineering and technological subjects, between 800 and 900 for classics, philosophy, and literature, and about 1200 for pure science and mathematics. Applications are still being received in large numbers, and are being dealt with at the rate of more than 100 a day.

Public Health.

REPORT OF THE LONDON COUNTY COUNCIL'S MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER FOR THE YEAR 1918.

Dr. W. H. Hamer's annual report on the health of the metropolis during 1918 contains a great deal of interesting material. It appears that in 1918, for the first time in records going back nearly a century, the deaths in London exceeded the births. Two causes contributed to this result—namely, the reduction in births brought about by the war and the large number of deaths from the two epidemics of influenza. The deaths among civilians alone during the year outnumbered the births by nearly 5000, and to this figure must be added a number of deaths among Londoners on active service. In the first week of November, when the second epidemic of influenza reached its height, the death-rate in London was 55·5 per 1000. This is the highest rate recorded in any week since the cholera year of 1849, in the thirty-sixth week of which 3183 deaths were registered, giving a rate of over 72 per 1000. The total number of deaths among civilians in 1918 numbered nearly 76,000, and of this total it is estimated that not fewer than 18,000 were due to the influenza epidemics. The infant mortality was 108, showing a slight increase on the rate of 104 per 1000 births in 1917.

Notifiable Infectious Diseases.

The remarkably low prevalence of notifiable infectious diseases in London in recent years was maintained in 1918. Several groups of small-pox cases, however, gave cause for anxiety, but happily in each instance prompt measures of isolation were effective in limiting the spread of the disease. Diphtheria was less prevalent than in 1917, and, while there was a slight increase in the number of cases of scarlet fever, the total was nevertheless far below the average. There was an increase in the deaths from dysentery, which amounted to 313, as compared with 290 in 1917, the increase being in female deaths, while the male deaths showed a decline. There were no recognised outbreaks due to importation of the disease from abroad, such as occurred in two boroughs in 1917. The incidence of typhoid fever was very low. Cerebro-spinal fever was less prevalent than in 1917, and polioencephalitis and poliomyelitis were at a comparatively low ebb. There were, however, a few cases of encephalitis lethargica which might formerly have been described as polioencephalitis. There was some increase in the number of cases of pulmonary tuberculosis notified, both among males and females, mainly in the first half of the year. The mortality was also higher than in 1917, but this increase was largely due to the influenza epidemics.

Fleas and Scarlet Fever.

In recent annual reports by Dr. Hamer the relationship of scarlet fever to rainfall and flea prevalence was discussed. The present report contains a diagram showing the seasonal prevalence of fleas over a series of years and the incidence of scarlet fever and diphtheria in the corresponding period. The diagram is divided into two sections; the first shows the monthly prevalence of fleas in relation to the monthly case rates of scarlet fever and diphtheria during the ten years 1909–18. A small inset diagram gives the mean monthly rates for the ten years, and as the maximum seasonal incidence of scarlet fever cases is about one month later than the maximum prevalence of fleas the case-rates are ante-dated one month to facilitate comparison. The second section of the diagram is designed to illustrate how far a deviation from the average quarterly incidence of flea prevalence is associated with a corresponding deviation from the average quarterly incidence of scarlet fever, as well at all ages as in certain age-groups; the average for diphtheria at all ages being also shown. The contour of flea prevalence is based upon figures which post-date by one month the figures for scarlet fever and diphtheria. The first section of the diagram shows a greater measure of association of annual prevalence of fleas with scarlet fever than with diphtheria. The three years of highest prevalence of scarlet fever and fleas (1913–15) are followed by three years of relatively low incidence, but in diphtheria the correspondence is not so close. In some years there is a secondary prevalence of

diphtheria following the normal autumn incidence, and in 1914 the February case-rate of diphtheria exceeded the normal autumnal maximum of the preceding October. There is no evidence of any similar secondary prevalence in the case of scarlet fever, although the decline after the normal autumnal maximum is not equally regular in all years.

In the second section of the diagram the average figures for each quarter are taken as a basis in order to eliminate the wide fluctuations of monthly records. The diagram shows the extent of deviation in any first quarter from the average of nine first quarters in the period 1910–18, and so on for other quarters. The general similarity of the contours of the flea and scarlet fever prevalences is significant, especially in view of the less-marked correspondence shown in the case of diphtheria. In view of the interval of about a month between the maxima of flea and scarlet fever prevalence, the question arises whether the interval points to the fact that there are two distinct phenomena controlled by one factor (such, for instance, as meteorological conditions), or whether a part of the interval can be taken to represent evolution of a scarlet fever germ. In either case the facts, in Dr. Hamer's opinion, imply that the conditions which favour flea prevalence are either identical or intimately associated with those influencing prevalence of scarlet fever, and a presumption is raised that steps directed to the elimination of fleas may loosen the foothold of scarlet fever. Effect is, as far as practicable, being given to this view in London at the present time. There was, for example, prevalence of scarlet fever in Southwark in the summer of last year. The outbreak occurred at a time when the amount of scarlet fever in London as a whole was relatively small. The area affected was very limited, but the incidence within the area was very high. Application was made to the borough council to disinfect the infants' department of the council's school central to the area, the records of which showed a greatly excessive proportion of flea-bitten children. This was done, and, in addition, the officers of the borough council visited homes and disinfected rooms and bedding associated with scarlet fever cases. This action was followed by marked reduction of prevalence of scarlet fever.

Influenza.

A special report on the three widespread influenza epidemics of 1918–19 is given in the appendix. The report is divided into two parts—namely: (1) a review of recent epidemic prevalences; and (2) a study of the light thrown on these epidemics by earlier prevalences, with a summary view of the epidemiology of the influenzal group of diseases. If the subject is to receive adequate treatment, Dr. Hamer urges the necessity for "extensive and peculiar" knowledge of the epidemiology of past epidemics of influenza in London, and expresses the opinion that the subject must be approached from the natural history point of view. As Creighton has said in another connexion, the older or Hippocratic method must be applied. This is one which "took account of gradations, modifications, affinities, being careless of symmetry, of definitions, or clear-cut nosological ideas, or the dividing lines of a classification." The attempt to comply with such conditions will involve reference to the sweats, agues, spotted fevers, and lethargies of the earlier centuries; then, throughout, to obscure pneumonias, certain outbreaks of "typhus" and various "new diseases." The special report on influenza contains many valuable suggestions, and is worthy of the careful consideration of all epidemiologists.

URBAN VITAL STATISTICS.

(Week ended Sept. 13th, 1919.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at 16,500,000 persons, the annual rate of mortality, which had been 10·0, 10·0, and 10·7 in the three preceding weeks, fell to 10·4 per 1000. In London, with a population slightly exceeding 4,000,000 persons, the annual death-rate was 10·9, or 0·4 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 5·6 in Wallasey, 5·9 in Huddersfield, and 6·0 in East Ham and in Bury, to 16·3 in Tynemouth, 17·1 in South Shields, and 19·3 in West Hartlepool. The principal epidemic diseases caused 313 deaths, which corresponded to a rate of 1·0 per 1000, and included 241 from infantile diarrhœa, 26 from diphtheria, 17 from whooping-cough, 15 from measles, 11 from scarlet fever, and 3 from enteric fever. Measles caused a death-rate of 1·3 in Barrow-in-Furness and in Gateshead. There were 1504 cases of scarlet fever and 1057 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1454 and 1006 respectively at the end of the previous week. The causes of 16 deaths in the 96 towns were uncertified, of which 4 were registered in Liverpool, 3 in Tynemouth, and 2 in Birmingham.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual rate of mortality, which had been 10·7, 10·9, and 10·8 in the three preceding weeks, fell to 10·2 per 1000. The 222 deaths in Glasgow corresponded to an annual rate of 10·3 per 1000, and included 20 from infantile diarrhœa, 4 from diphtheria, 3 from whooping-cough, 2 from measles, and 1 from scarlet fever. The 68 deaths in Edinburgh were equal to a rate of 10·5 per 1000, and included a fatal case each of measles and diphtheria.

Irish Towns.—The 134 deaths in Dublin corresponded to an annual rate of 17·3, or 2·4 per 1000 below that recorded in the previous week, and included 7 from infantile diarrhœa, and 1 each from enteric fever and diphtheria. The 100 deaths in Belfast were equal to a rate of 13·0 per 1000, and included 10 from infantile diarrhœa, and 2 each from enteric fever and scarlet fever.

The Services.

THE HONOURS LIST.

The following awards to medical officers in connexion with military operations in India and in Persia are announced:—

C.I.E.—Capt. J. B. Hanafin, I.M.S.; Lt.-Col. J. B. Jameson, I.M.S. (ret.); Maj. L. Hirsch, I.M.S.; Lt.-Col. S. J. Rennie, R.A.M.C. (ret.); Lt.-Col. J. W. Watson, I.M.S.

C.S.I.—Col. A. E. Tate, C.M.G., A.M.S.

C.B.E.—Maj. and Bt. Lt.-Col. (temp. Col.) F. A. F. Barnardo, C.I.E., I.M.S.

O.B.E.—Capt. (temp. Maj.) A. F. Babonau, I.M.S.; Temp. Capt. J. Cairns, R.A.M.C. (T.F.); Capt. (temp. Maj.) F. R. Coppinger, R.A.M.C.; Maj. (temp. Lt.-Col.) J. K. S. Fleming, I.M.S.; Maj. G. D. Franklin, I.M.S.; Maj. A. T. Frost, R.A.M.C.; Capt. W. A. Frost, R.A.M.C.; Capt. T. B. Heaton, R.A.M.C. (S.R.); Maj. D. P. Johnstone, R.A.M.C.; Maj. T. W. Minty, I.M.S.; Lt.-Col. P. St.C. More, I.M.S.; Maj. R. B. Nicholson, M.C., I.M.S.; Maj. H. W. Pierpoint, I.M.S.; Lt.-Col. J. J. W. Prescott, D.S.O., R.A.M.C.; Capt. C. H. Smith, I.M.S.; Capt. (temp. Maj.) J. R. D. Webb, I.M.S.

M.B.E.—Lt. (temp. Capt.) P. X. Godinho, I.M.S.

Military Cross.—Temp. Lt. Mahomed Nawaz, I.M.S.; Capt. R. R. M. Porter, I.M.S.

To be Brevet Lieutenant-Colonel.—Maj. N. W. Mackworth, I.M.S.

To be Brevet Major.—Capt. J. A. A. Kernahan, I.M.S.; Capt. (temp. Lt.-Col.) J. V. Macdonald, M.C., I.M.S.; Capt. (temp. Maj.) M. A. Rahman, I.M.S.; Capt. (temp. Maj.) E. E. Doyle, I.M.S.; Capt. (temp. Maj.) C. Ryles, R.A.M.C.; Capt. (temp. Maj.) W. R. Stewart, I.M.S.

ARMY MEDICAL SERVICE.

Major-General Sir M. T. Yarr, C.B., K.C.M.G., to be Inspector of Medical Services (temporary), vice Major-General Sir W. Babtie, V.C., K.C.M.G., C.B., K.H.S.

Temp. Cols. Sir T. C. English, K.C.M.G. (Captain, R.A.M.C., T.F.), and Sir C. A. Ballance, K.C.M.G., C.B., M.V.O. (Captain, R.A.M.C., T.F.), relinquish their temporary commissions on re-posting.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. O. W. A. Elsner relinquishes the temporary rank of Colonel on re-posting.

The undermentioned relinquish the acting rank of Lieut.-Col. on re-posting: Majors G. H. Stevenson, T. F. Ritchie, P. J. Marett; Temp. Capts. J. Scott, D. Miller.

The undermentioned to be acting Lieut.-Colonels whilst commanding Medical Units: Capt. (acting Major) R. G. Shaw; Capts. E. Percival, T. S. Eves; Temp. Capts. (acting Majors) H. C. Watson, J. P. Davidson; Temp. Capt. G. Jackson.

Temp. Major E. W. H. Groves (Captain, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

The undermentioned relinquish the acting rank of Major: Capt. J. E. Hepper (on ceasing to be specially employed); Temp. Capts. A. W. Tabuteau, L. ap. I. Davies, W. H. Clements, J. M. Morris, W. J. J. Arnold, C. Roche, A. L. Krogh (on re-posting); Temp. Lieut. G. E. Froggatt.

To be acting Majors whilst specially employed: Capts. S. H. Smith, F. Worthington, R. E. Todd, H. F. Joynt; Capt. and Bt. Major T. A. Weston; Temp. Capts. H. G. Gillies, A. L. Robinson, S. S. Dunn, G. Cooper, H. M. Anderson, C. E. Waldron.

Capt. T. D. Inch resigns his commission.

Temp. Capt. (acting Major) R. Jamison to be acting Lieutenant-Colonel whilst specially employed.

Temp. Capts. J. H. G. Hunter and J. McFadden to be Captains.

The undermentioned late temporary Captains to be temporary Captains: L. Gibbons, R. A. Flynn, T. F. Griffin, J. Joule, C. L. Driscoll.

Officers relinquishing their commissions: Temp. Lieut.-Col. and Hon. Lieut.-Col. W. I. de C. Wheeler (retains the rank of Lieutenant-Colonel); Temp. Lieut.-Col. E. J. Moore, Temp. Lieut.-Cols. G. E. Miles and C. T. Parsons (retain the rank of Lieutenant-Colonel); Temp. Hon. Lieut.-Cols. G. S. Buchanan and J. Robertson (retain the honorary rank of Lieutenant-Colonel), Temp. Hon. Lieut.-Col. H. R. Kenwood (Major, R.A.M.C., T.F.) (relinquishes his temporary commission on re-posting). Temporary Majors retaining the rank of Major: T. M. Kendall, P. J. A. Seccombe. Temporary Captains granted the rank of Major: J. Crawford, R. E. Cree. Temporary Captains retaining the rank of Captain: A. W. George, D. Corry, W. E. Morgan, W. F. Thompson (acting Major), J. E. L. A. Turnley, R. M. Gordon, F. F. C. Willington, W. G. Shaw, J. G. Shanklin, G. L. Keynes, C. J. Glasson, J. M. Christie, S. C. H. Moberly, E. R. Wheeler, R. M. Brown, J. A. Wilson, F. W. Jones, C. J. Heaton, J. D. Carroll, R. A. Banbury, A. Poole, P. B. Whittington, J. C. Fergusson, J. Prichard, W. D. Lawrie, W. McFarlane, G. Hoffmann, C. Gray, H. C. Hinwood, W. C. P. Barrett; Temp. Hon. Capt. W. A. Pride (retains the honorary rank of Captain); Temp. Lieuts. R. M. D. Devereux and W. H. Newton (retain the rank of Lieutenant).

Canadian Army Medical Corps.

Temporary Lieutenant-Colonels (acting Colonels) to be temporary Colonels: C. P. Templeton, E. L. Stone.

Temporary Majors (acting Lieutenant-Colonels) to be temporary Lieutenant-Colonels: J. S. Jenkins, C. Hunter, W. T. Lockhart, C. F. L. Haszard.

Temp. Major (acting Lieut.-Col.) L. H. McKim relinquishes the acting rank of Lieutenant-Colonel.

The undermentioned temporary Captains (acting Majors) relinquish the acting rank of Major: J. G. Shaw, J. Pullar.

The undermentioned temporary Captains (acting Majors) to be temporary Majors: D. S. Lewis, S. Sprague, G. O. Scott, H. W. Wadge, P. J. S. Bird, J. D. Jones, J. S. Fitzsimmons, J. W. Hunt, A. B. Wilkes, B. R. Almquest.

Temp. Capts. (acting Majors) E. F. Risdon and R. A. Thomas relinquish the acting rank of Major.

Temp. Major N. G. Cooper and Temp. Capt. H. W. Bell retire in the British Isles.

South African Medical Corps.

The undermentioned relinquish their commissions and retain the rank of Captain: Capt. J. McL. Hendry; Temp. Capts. E. W. Dyer, J. I. de Villiers, E. Wolff, A. S. Wilson, G. H. Coke.

GENERAL RESERVE OF OFFICERS.

T. D. Inch, late Captain R.A.M.C., to be Captain.

SPECIAL RESERVE OF OFFICERS.

Capts. L. C. Rudd and E. R. Chambers relinquish their commissions.

Capt. R. T. C. Robertson relinquishes the acting rank of Lieutenant-Colonel on ceasing to command a Medical Unit.

Captains relinquishing the acting rank of Major on ceasing to be specially employed: H. C. G. Pedler, R. O. C. Thomson.

Captains to be acting Majors: D. McIntyre, J. J. McI. Shaw (whilst specially employed).

TERRITORIAL FORCE.

Major M. G. Foster is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

Capts. (acting Lieut.-Cols.) J. Barkley, D.S.O., and W. D. Sturrock relinquish their acting rank of Lieutenant-Colonel on ceasing to be specially employed.

Capts. (acting Majors) J. L. M. Symns and L. E. Hughes relinquish their acting rank of Major on ceasing to be specially employed.

4th London General Hospital: Major W. A. Turner is restored to the establishment on ceasing to hold a temporary commission in the Army Medical Service.

2nd London Sanitary Company: Capt. (acting Major) A. G. G. Thompson relinquishes the acting rank of Major on ceasing to be specially employed.

ROYAL AIR FORCE.

Medical Branch.—Capt. (acting Major) C. J. G. Taylor (Surgeon-Lieut., R.N.V.R.) relinquishes his commission on ceasing to be employed.

The undermentioned are transferred to the unemployed list: Capts. Wm. S. T. Connell, T. R. Hunter, W. H. Cam.

INDIAN MEDICAL SERVICE.

To be acting Lieutenant-Colonels while commanding Medical Units in the Field: Majors F. H. Stewart, S. H. L. Abbott, Capts. A. G. Coullie, J. B. Lapsley. J. Portelli to be temporary Lieutenant.

DEATHS IN THE SERVICES.

Fleet Surgeon George Hewlett, R.N., died on August 26th at Andover as a result of a collision between the motor-bicycle he was riding and a motor-car four days previously. As a student in Edinburgh he surprised some by graduating after four years' study with first-class honours, but he was very shrewd, had an alert mind and a retentive memory. A Cornishman, he went at once to sea, first in the merchant service, and later in the Navy, where he did a great deal to keep a friendly spirit alive in the ships in which he served. His loss will be keenly felt by his old shipmates. He was by nature a man of the wild, and after leaving the service spent a year fishing and shooting in British Columbia. His alternative employment was the sailing of his yacht about the Channel. For three years of the war he served as fleet surgeon of Portsmouth Dockyard.

THE LATE MR. EDWIN O. SACHS, F.R.S.E., CHAIRMAN OF THE BRITISH FIRE PREVENTION COMMITTEE.—Mr. Sachs, who died at his residence in Portland-place on Sept. 9th at the early age of 49, practised for several years as an architect and was the author of a standard work, "The Modern Opera House and Theatre." He was the first in England to apply electrical power to the working of the stage, and the "Sachs System" has been adopted by Covent Garden Opera House and the Theatre Royal, Drury-lane. It is, however, by his keen interest in regard to fire protection that he will be most remembered. Realising that the great loss of human life and property due to fire might be much reduced by legislation and ordinary measures of precaution, he devoted his time to propaganda work in this direction, and helped to procure preventive legislation by which loss of infant life due to the use of inflammable clothing could be minimised. His activities, which were entirely voluntary, extended to many other countries besides the British Isles, and he was vice-president of the International Fire Service Council. During the war the committee of which he was chairman made arrangements for a voluntary survey force for over 2000 war hospitals, camps, and factories. He initiated or guided work of high importance to the nation in circumstances of ill-health attended by much suffering.

Correspondence.

"Audi alteram partem."

THE BRITISH FEDERATION OF MEDICAL AND ALLIED SOCIETIES.

To the Editor of THE LANCET.

SIR,—A letter from Dr. E. R. Fothergill was published under the title "The Cult of Individualism" in the issue of the *British Medical Journal* dated Sept. 13th. That communication contained so many inaccuracies and mis-statements that we would request space in your valued columns to correct any false impressions that may have been occasioned by it. Seeing that no issue exists between the British Medical Association and the Federation of Medical and Allied Societies (late Medical Parliamentary Committee), of the former of which we are also members, we are not concerned with the defence of the body we represent. In the first place we do not subscribe to the wholesale condemnation of the Association contained in the fourth paragraph of Dr. Fothergill's letter. And we cannot agree that the British Medical Association "is now recognised by all departments in the State as the mouthpiece of the profession," much as we might wish it to be. Apart from the fact that the Medical Directory contains the names of twice the number of medical men that the membership of the Association embraces, there are several other professional bodies that the Government departments consult direct. The policy of the Federation can in no way be construed as making for rivalry with the Association; the aims of the former are definite in extent. It provides a permanent "round table" at which representative doctors, of all shades of opinion and engaged in all branches of medical work, may meet and confer with one another and with the representatives of lay bodies whose activities are ancillary to medicine; it aims at obtaining support for the profession from a much larger section of the public than any purely medical body can hope to obtain; it constitutes a "reference library" on matters affecting the public health, and by being in a position to supply information to the profession and the public, on the one side, and to those guiding legislation, on the other, it is truly a "liaison committee." Thus, in place of overlapping and confusion in policy, the Federation offers a real prospect of unity in thought and action.

Dr. Fothergill has a great deal to say regarding schisms in the ranks of the profession: it will therefore interest him to know that the three bodies he mentions and whose existence he deplores are amongst those who have taken part in the formation of the Federation, so that already far greater unity exists than was the case prior to the formation of the Medical Parliamentary Committee. It will be time enough to discuss the objection raised regarding individual subscriptions when the Federation asks for them.

It would be well if Dr. Fothergill could understand that there are others besides himself who are working disinterestedly for the good of the profession and the community.—We are, Sir, yours faithfully,

MALCOLM MORRIS,
Chairman.
CHARLES BUTTAR,
Honorary Secretary.
N. HOWARD MUMMERY.
Organising Secretary.

The British Federation of Medical and Allied Societies,
20, Hanover-square, W., Sept. 15th, 1919.

CONTROL OF VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—In the account given in THE LANCET of Sept. 6th of the recent deputation of the National Council for Combating Venereal Diseases, and the reply thereto of the Public Health Committee of the London County Council, the recommendation of the last-named body is merely stated without the addition of the detailed reasons on which it was presumably based. THE LANCET account proceeds to comment on the London County Council's recommendation as indicating a "policy of passivity" in relation to the preventive treatment of venereal diseases, and apparently regards the National

Council's proposal of "treatment at an approved centre within a short time after exposure to possible infection," and its further statement that, for the effectual prevention of *syphilis*, "treatment must be initiated within six hours after exposure to risk," as embodying the only possible scheme of medical prevention.

I desire to point out that the National Council's scheme in respect to *syphilis* (as reported) gives a very wide and dangerous margin of safety in its mention of "within six hours" and says nothing of the safety margin in the case of *gonorrhœa*, which is overwhelmingly more widespread than syphilis. It is scarcely to be supposed that the six-hour margin is meant by the Council to apply to both cases! Further, the National Council's scheme not only is of very doubtful efficiency, but also involves an increased expenditure of public money out of all proportion to the slight amount of good it might possibly bring about.

Is it not probable, if not certain, that it is owing to such objections as these that the London County Council's Public Health Committee "is not satisfied that the public provision of early preventive treatment as suggested by the National Council for Combating Venereal Disease is desirable"? Or is THE LANCET'S implication that the County Council's Committee is indifferent to the question of preventing the spread of venereal diseases to be preferred?

I am Sir, yours faithfully,

Sept. 11th, 1919. H. BRYAN DONKIN.

PROPHYLACTIC QUININE IN MALARIA.

To the Editor of THE LANCET.

SIR,—During a stay of three months in Aden I had a great deal of trouble with my servant. He was a Somali, who understood no English and no Hindustani, and who spoke worse Hindustani, if possible, than I did myself. Heated misunderstandings, no doubt aggravated by the fact that I was suffering at the time from repeated attacks of mild malaria, naturally resulted, and our relations became more and more strained.

The first step on the road to reconciliation was taken when I found that I could with absolute certainty keep myself free from malaria by taking 5 gr. of quinine daily. I then found to my shame one evening that my unfortunate servant was excusing himself for his shortcomings in a fearful jumble of tongues on the grounds that he was sick in the same way that "master" had been sick himself. Five grains of quinine daily transformed him into an intelligent and efficient valet. To save trouble I used to give him my own tabloids, and when we parted, the best of friends, he begged me to tell him where they could be purchased. I explained to him, in the code we had established, that they were beyond his means and he must go to the civil hospital.

Nothing will ever persuade this Somali boy or myself that in certain circumstances there is not a type of malaria which can with certainty be prevented by quinine, and which will with equal certainty recur if the quinine is discontinued.

In view of the above domestic incidents I have read with much interest Major A. H. Gosse's article on quinine prophylaxis in your issue of Sept. 6th.

I am, Sir, yours faithfully,

Kensington, W., Sept. 12th, 1919. J. E. SANDILANDS.

EROSION OF THE GREAT VESSELS OF THE NECK IN SCARLATINAL ABSCESS.

To the Editor of THE LANCET.

SIR,—This condition may not be so rare as is implied in the annotation in your issue of last week. During an epidemic of scarlet fever in South Wales in 1887 I saw two cases in a fortnight, both in young children, and both rapidly fatal. One burst externally, and I concluded that it was the external carotid which was eroded.

I am, Sir, yours faithfully,

Bournemouth, Sept. 14th, 1919. E. CURTIN.

CRYPTOPODIA.

To the Editor of THE LANCET.

SIR,—Mr. T. S. P. Strangeways has overlooked the fact that the arthritis began 10 years later than the enlargement of the feet, and I may add that there is no trace of it in the lower limbs. Moreover, for more than 10 years past the patient has been bedridden—i.e., living under the very conditions which Mr. Strangeways lays down as essential to cure. In the face of the very remarkable blood-count it is hard to deny the right of the condition to be regarded as a disease, and even a specific one. I especially hope that the blood-count will receive the attention that it deserves. With reference to Dr. Parkes Weber's remarks, I distinctly stated, and believe that I demonstrated to Dr. Parkes Weber personally, the very ready and deep pitting on pressure in the case under notice. This differentiates it sharply, on his own showing, from the case described by him at the Royal Society of Medicine. How my case can possibly have anything in common with one in which the enlargement consisted of "dense fibrous tissue," as described by Mr. W. Robinson in your last issue, I fail to see.

For the present, my description of my case by a new name, and as a new disease, has not been in any way shown to be unwarranted.

I am, Sir, yours faithfully,

De Crespigny Park, Denmark Hill, S.E., Sept. 15th, 1919. E. C. BOUSFIELD.

THE RESULTS OF COMPLETE COLECTOMY.

To the Editor of THE LANCET.

SIR,—In reference to Mr. J. E. Adams's letter in THE LANCET of August 23rd, in which he criticises me for not giving fuller details of my cases, I plead guilty, since I might have mentioned that he was the surgeon who performed the third operation on Case B.

I am, Sir, yours faithfully,

JAMES TAYLOR.

Cambridge Hospital, Aldershot, Sept. 12th, 1919.

MIND AND MEDICINE.

To the Editor of THE LANCET.

SIR,—The adhesion of a prominent psychologist to one of Freud's main principles, noticed lately in your journal, reminds us that not so long ago a leading alienist wrote that psycho-analysis was dead in England, thanks to Dr. C. Mercier. A continental observer, if told of this, would likely enough have seen in it merely the common spectacle of a man of talent attacking a man of genius. Now, it is certain that Dr. Mercier was a man of talent, but not quite certain yet that Freud has genius. Contemporary estimates are notoriously unreliable, and, moreover, inevitably so, or mankind, which, as was long ago pointed out, whether or not it wishes to act rightly, mostly desires correct knowledge, would have improved ere this its powers of criticism of a current event or opinion. Sometimes posterity endorses contemporary verdicts, but oftener reverses them. How will it be with Freud's work? The testimony already mentioned may furnish an indication, as also the appearance of paragraphs on "repression" in the daily press—a phenomenon, this latter, of complete unimportance had it happened when Freud's name first crossed the Channel (or rather the North Sea), but of considerable significance now, after the lapse of years and the consequent test of time.

What more than his obscurity of style and the poorness of his translators has spoiled Freud's reception over here is the British ignorance that there is such a study as sexuology—or perhaps one had better say, after the last International Medical Congress in London, the British "conspiration" (as I have seen it misspelt in a foreign journal) of silence. That ignorance or that conspiracy is perforce beginning to disappear now; still, in this country we have only yet got to the antivenereal campaign and sexual pedagogy, and to these only fairly recently; although in different booklets on the latter subject have appeared in such numbers as to suggest that their production is, if one may help oneself to a metaphor from the illustrious physician of Chinon, as easy as wetting the bed. The best book of Freud's to begin with—in fact his countrymen say his best book altogether—is the "Psycho-pathology of Everyday Life." The assertion is ventured that a single perusal of this work would make a good many partial converts. When a man sees that by the help of Freud, and of nobody else, he can account for missed trains, undated cheques, and other seemingly fortuitous slips of his daily life, he is impressed. Not that the dreaded sexual element is absent. This book, too, is not one to leave about. Sex occupies in it nearly as much space as in human thought

and conduct. One secretly fearing that his mistress has conceived makes an ordinary slip of the tongue in ordinary conversation; but it is enough for the psycho-analyst to guess his secret by. Well, these things happen and will go on happening; better to study than to snigger over them, or pretend they are non-existent.

Probably the strongest impeachment comes from the man who first in this country mentioned Freud's work, and to whom the latter paid the compliment of writing to regret that psycho-analysis did not meet with his full approval. That impeachment was, that the line of inquiry is full of risk of error; for sexual symbolism, which is central to the argument of Freud's chief work, can, like any other symbolism, be rather easily carried to an excess, become far-fetched, strained, intolerably overweening. In its simpler applications it will probably convince most unprejudiced minds, particularly in presence of the high standard of investigation some Freudian disciples attain. Take, for instance, an article in *Imago*, on the sexual symbolism of the fish, by a lesser known one. In this paper proofs, often pictorially reproduced, are drawn from prehistoric drawings, down through classic art, through mythology, anthropology, etymology, literature and folklore, to a quotation (about Montenegrin water-bailiffs) from *Country Life*, of all sources—and the editors in a fine spirit of team work add others. It is difficult to doubt, after reading this multifarious evidence of the world-wide association of the fish with erotic deities, and those presiding over increase and fertility, as also with marriage ceremonies, that the author has made out a strong case. Again, others besides Freud rely on sexual symbolism. In view of the mention of religion in your article the following two instances come in well. A reviewer in *The Expository Times* has written: "..... the Bible is full of symbols and we have lost their language. We are very prosaic. The writers of the Old Testament and of the New were very imaginative. Between us there is a gulf fixed of which we are aware only in unquiet moments." Now a much less orthodox, but not Freudian, writer in another Continental journal has recently tried to interpret the symbolism in the familiar story of Samson. It is, he says, a story of a rude, primitive time, containing little of morality, and turning on the three motives of strength, love, and rustic wit. To trace the second motive he has recourse to the sexual symbolism undoubtedly present in the narrative; and when he recalls how the Romans at the Cerealia let loose in the circus foxes with firebrands at their tails, and the rite at Carseoli of covering foxes with grass, setting fire to them, and letting them run over the fields, the fox being regarded as the Genius of the Crops, and kindred Arabian and Japanese rites, it at least puts one strongly in mind of the way in which early civilisations connected phallic symbols with the earth's fertility. Exegesis of this kind will be allowed much significance; and not only this, but also some of the simpler interpretations of sexual symbolism in dreams and neuroses. But with more highly developed ones a feeling of dubiety begins. One perceives that the logical razor of Occam, never very sharp in Austro-Germany, would make short work of many of them. And that, then, is the danger, that sexual symbolism is a risky business. You never know how far to trust it, how far to go with it.

Mr. Havelock Ellis, perhaps the rarest mind in the British medical profession, further pronounces Freud to be an artist. Certainly he is one of the few who are at home either in the literary or the scientific camp, two positions between which there has been small, but for various reasons must in the future be more, communication. It is a bold thing, however, to say that the artistic imagination can serve the purpose of scientific investigation, and a statement unwarranted by history. What might be nearer the truth is that Freud has the specific faculty of the great investigator, the gift of "superb guessing" (which, after all, is essentially reconstructive, not creative), but has it in exuberant degree; like, for instance, Kepler the astronomer. Of his amazing reconstructions of the infant mind he offers hardly a trace of verification. The length of his inductive leaping pole is dangerous, but the reach of his theories impressive. And if it be true that he has opened a new window giving upon the wonderland of the human mind, then it is not fitting to complain of the view.—I am, Sir, yours faithfully,

Sept. 15th, 1919. CADUCEUS.

Obituary.

JOHN CAHILL, M.D. DURH., F.R.C.S. ENG.

Dr. John Cahill, whose death on Saturday, Sept. 6th, was alluded to in THE LANCET last week, was the only son of the late Dr. Thomas Cahill, of Albert Gate, Knightsbridge. A Catholic, he was born in 1857 and educated at Beaumont College, and then for two years in Germany. He joined the medical school of St. George's Hospital in 1877, but in the year of his qualification as M.R.C.S. —namely, in 1881—his father died. Cahill remained at the hospital discharging the junior appointments, and took the F.R.C.S. Eng. in 1884, when he decided to go into private practice in the neighbourhood where his father and his family were still well remembered. This he did, and for over 30 years he practised in Seville-street, Lowndes-square, his success being alike due to his high professional attainments and his kind and cultivated personality. At first his practice was distinctly surgical, and for some years he was surgeon to the Hospital of St. John and St. Elizabeth, but later he proceeded to the M.D. Durham, and confined himself to general practice. He was medical adviser to the Egyptian Civil Service and a member of the Egyptian Government Medical Commissioners Board, his knowledge of French and German standing him in good stead in such appointments.

Cahill always took a deep interest in the organisation and material prospects of St. George's Hospital, which to him was, of course, not only his old educational centre, but an important local institution. The perplexities which have beset the hospital in the midst of the various rumours with regard to the sale of the site were under discussion by the committee of management of the charity at a time when he was a member of the committee, and on that body no one's voice was more readily heard, both on domestic matters and larger schemes. During the shortage of the medical staff, caused by the calling up of all available men to serve with the forces, Cahill did arduous and unselfish work as temporary assistant physician to the hospital, and his death from heart disease, while still in middle age, can undoubtedly be referred to the strain of professional overwork aggravated by deep sorrow caused by the death of his son.

In 1887 he married Lucy Keith, youngest daughter of the late Thomas Keith, C.B., Accountant General at the India Office, and had two daughters who survive him, as well as an only son, Captain Archibald Cahill, M.C., of the Royal Berkshire Regiment, who was killed in action in 1917. For 40 years Cahill was a well-known man to all connected with St. George's Hospital, and he leaves behind him a reputation for accomplishment, industry, and courtesy which all might envy.

RICHARD FRANCIS TOBIN, F.R.C.S.I.,

PAST PRESIDENT OF THE IRISH MEDICAL ASSOCIATION.

Mr. Richard F. Tobin, of Dublin, died suddenly at his club on August 31st at the age of 76 years. A native of Waterford, he was educated at Clongowes Wood College and Dublin, and after obtaining his licence from the Royal College of Surgeons of Ireland in 1864 at the age of 21 he entered the Army Medical Service. He had a distinguished career, and in 1880 was appointed assistant professor of surgery in the Army Medical School. In 1885 he took part in the Sowakin Expedition, subsequently contributing an account of his experiences to the Transactions of the Royal Academy of Medicine in Ireland. He retired from the Army Medical Service soon afterwards with the rank of Brigade Surgeon, and, settling in Dublin, was appointed a surgeon to St. Vincent's Hospital. He held this post until a few years ago, and earned the reputation of a sound and careful surgeon, taking a special interest in diseases of the prostate. In later years he suffered much from deafness, and some three years ago he retired from active work. He continued, however, to hold the posts of Inspector of Anatomy in Ireland and secretary of the Board of Superintendence of Dublin Hospitals. He was for a time President of the Irish Medical Association, and was surgeon to the Marquis of Aberdeen during the period of his viceroyalty. He wrote a "Synopsis of Surgery," and contributed many articles to the professional journals.

Tobin lost his only son in the Dardanelles, and the grief for this loss, together with his own personal affliction of deafness, would have embittered many men, but with him sorrow only brought out more strongly his native kindliness. A few months after his son's death it fell to Tobin's lot to minister professionally to the wounds of James Connolly, the rebel leader of Easter week, in the interval between his surrender and his execution. A friendship sprang up between the two men so curiously unlike—the aristocrat and the revolutionary, the loyal veteran soldier and the avowed rebel. After Connolly's death Tobin made himself, it is believed, responsible for the expense of educating the labour leader's son. The incident is illustrative of the gentleness, the simplicity, and the Christianity of Tobin. He brought the same gentleness and charming courtesy into every relation of life, and no surgeon in Ireland enjoyed more fully the love and friendship of his students and professional colleagues.

Medical News.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, WESTMORELAND-STREET, W.—Systematic courses of instruction are given from time to time in morbid anatomy, pathology, diagnosis, and treatment of diseases of the heart and circulation. Practical instruction in electrocardiography and graphic methods is also given. Post-graduate students are admitted to the clinical practice of the out-patient department and wards, and application should be made to Captain R. G. E. Whitney, the secretary of the hospital.

THE War Office has addressed to Sir Arthur Stanley, the chairman, Joint War Committee, British Red Cross Society and Order of St. John, a letter conveying the appreciation of the Army Council of the inestimable service rendered by the British Red Cross Society and the Order of St. John of Jerusalem in England. In this letter the Council recognise the high value of the work done by the organisations and the hospitals formed under their auspices. "The preparations," they say, "made in time of peace, and the energy and efficiency displayed when put to the test of war, have greatly assisted in the restoration of life and health to the sick and wounded, and have contributed in no small measure to the achievement of victory." Sir Arthur Stanley is finally requested to convey the thanks of the Army Council to the various branches of the two organisations whose members have unstintingly devoted their resources to the services of the sick and wounded.

BOATING ACCIDENT ON BELFAST LOUGH.—The bodies of the three victims of the boating accident of August 29th have now been recovered. Mr. Thomas Huston, L.R.C.P. & S. Edin., aged 48, of Woodville House, Hounslow, London, his 12-year-old son, and Mr. Frank Huston, son of Dr. James Huston, Carrickfergus, a medical student, started for a sail on Belfast Lough, nothing more being heard of them until the boat was seen drifting empty. In the course of the last week the bodies were found floating at sea and an inquest followed.

PRESENTATION.—The governors of the Royal Devon and Exeter Hospital recently presented Mr. E. J. Domville, consulting surgeon to the charity, with a grandfather clock and an illuminated address, as a mark of appreciation for his services in performing the duties of resident house surgeon for a period of three and a half years during the period of the late war.

BRISTOL ROYAL INFIRMARY.—A strong appeal is being made for increased financial support for the Bristol Royal Infirmary. The deficit is £22,170. The president, Mr. H. H. Wills, has offered £5000 conditionally upon the adverse balance being cleared off by the end of the year.

Messrs. Henry Frowde and Hodder and Stoughton have in preparation a "Practice of Medicine in the Tropics" by many eminent authorities, edited by Dr. W. Byam and Dr. R. G. Archibald, Majors, R.A.M.C. The number of contributors is 75, drawn from many parts of the world.

DONATIONS AND BEQUESTS.—The late Mr. Robert Anderson, of Glasgow, has bequeathed £1000 each to the Glasgow Royal Infirmary, the Western Infirmary, the Glasgow Samaritan Hospital for Women, and the Royal Hospital for Sick Children; and £500 each to the Victoria Infirmary and the Orphan Homes of Scotland.—By the will of the late Mrs. Sarah Finnie, of Kilmarnock, the testatrix left £1000 each to the Zenana Mission of the Church of Scotland and to the Kilmarnock Infirmary, and £350 to the Kilmarnock Nursing Association.

GUY'S HOSPITAL BIENNIAL DINNER.—The Guy's biennial dinner will take place at the Connaught Rooms on Tuesday, Oct. 28th, at 7 P.M., Dr. Lauriston Shaw in the chair. All Guy's men who have not received an invitation to the dinner are asked to communicate with Mr. F. J. Steward, 98, Portland-place, London, W. 1.

UNIVERSITY COLLEGE HOSPITAL. — The old students' dinner will be held at the Imperial Restaurant, Regent-street, on Friday, Oct. 3rd, Sir J. Rose Bradford in the chair. Tickets 15*s.* (exclusive of wine) may be obtained from the honorary secretary, Dr. A. M. H. Gray, 30, New Cavendish-street, W. 1.

IT has been decided to erect and partially endow a cottage hospital for Helston (Cornwall) as a war memorial. The cost of the scheme is estimated at £4000, and the building will contain eight beds. About £1600 has been subscribed, and it is thought that the amount required will be easily obtained.

THE Local Government Board has published what is to all intents and purposes a directory of maternity and infant-welfare centres in England and Wales. The list includes all the municipal and voluntary maternity and child-welfare centres known to the Board on April 1st, 1919. The names and addresses of the secretaries of voluntary centres are also given, and appended is an index of the towns and villages containing centres. It is a most useful little book of reference for all who are engaged in this class of work, but from the point of view of the doctor it would be still more useful were it to contain as well the name of the medical officer who is in charge of each centre. Such a directory would prove of immense help, and we believe that one containing this information has not as yet been published. The Local Government Board list can be procured through any bookseller or from H.M. Stationery Office under the title, "Maternity and Child-Welfare Centres in England and Wales."

ISOLATION ACCOMMODATION IN NORTH DEVON.—The question of isolation accommodation has again arisen in North Devon. Dr. W. A. Valentine, medical officer of health for Barnstaple Port Sanitary Authority, reported on Sept. 13th last, at their meeting in Barnstaple, that he had visited the hospital ship with Dr. H. A. Macewen, from the Ministry of Health, and that they found the ship was no longer suitable for the reception of patients. It was suggested by some of the members that a couple of Army huts should be obtained and placed between Instow and Fremington. At a subsequent meeting of the Barnstaple rural council a letter was read from the Lynton urban council stating that the latter were willing to join in a scheme with neighbouring authorities for the provision of an isolation hospital. The chairman, Mr. W. T. Buckingham, said that their chief difficulty lay in the absence of power to remove patients to hospital. They had cases and carriers of diphtheria in the district with whom they could not deal. He pointed out the function of a hospital in the prevention of epidemics. The hospital ship had prevented the spread of small-pox in Appledore when two cases occurred there 20 years ago.

POST-GRADUATE STUDY IN FRENCH: OPPORTUNITY AT LAVAL.—Speaking at the recent meeting of the Canadian Medical Association, Professor S Grondin, of Laval University, Quebec, stated that his university would be glad to receive, free of charge, any young English-speaking doctors of the Dominion who, having passed their degree in their own universities, would like to come to Quebec and follow during one year the lectures given at the university and the clinics in the hospitals. They would, he said, receive a hearty welcome, and after six months would have learned how to speak French. Laval was asking in return from the English universities the same privilege for its young French doctors. Professor Grondin went on to recall his own stay of six months in the Rotunda Hospital at Dublin, ascribing thereto his ability to deliver an address in English. We have no doubt that the Laval offer would be extended to medical graduates from this country who desired to acquire a working knowledge of medical French within the borders of a university of the Empire.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
Handbook of Gynæcology. By Bethel Solomons, M.D. Pp. xii. + 236 10*s.* 6*d.*

FROWDE, H., AND HODDER AND STOUGHTON, London.
Fractured Femurs. By M. G. Pearson, M.B., B.Sc., and J. Drummond, M.D. Pp. 92. 10*s.* 6*d.*

KIMPTON, HENRY, London.
The Operations of Obstetrics. By F. E. Leavitt, M.D. Pp. 466. 30*s.*
A Stereoscopic Atlas of Plastic Surgery of the Face, Head, and Neck, with Case Reports. By J. C. Beck, M.D., and I. Frank. With Stereoscope. 35*s.*

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMS, J., has been appointed Certifying Surgeon under the Factory and Workshop Acts at Bishop's Castle.

CAMPBELL, A S., Certifying Surgeon under the Factory and Workshop Acts at Dundee.

CHUBB, ELSIE M., M.D. Lond., D.P.H., Government Medical Inspector of Schools in the Cape Province, South Africa.

DAVIS, HARRY, M.R.C.S., L.R.C.P., L.S.A., D.P.H. Camb., Medical Officer for the No. 7 District by the Liskeard (Cornwall) Board of Guardians.

FITZGERALD, CHARLES CONWAY, L.R.C.P. & S. Edin., Chief Tuberculosis Officer for the county of Antrim.

LANGRAM, WILLIAM, L.R.C.S., L.M. Edin., L.A.H. Dub., Temporary District Medical Officer by the Axminster (Devon) Rural District Council.

MCKENNA, T. H., Medical Officer of the Forkhill Dispensary District.

Vacancies.

For further information refer to the advertisement columns.

Barbados General Hospital.—Sen. Res. S. £300.
Battersea General Hospital, Battersea Park, S.W.—Res. M.O. £200.
Bedford County Hospital.—Res. M.O. £150.
Belgrave Hospital for Children, Clapham-road, S.W.—Two Asst. P.'s
Bermondsey Infirmary, Lower-road, Rotherhithe, S.E.—First Asst. M.O. £350.
Bethlem Royal Hospital, Lambeth-road, S.E.—Hon. Neurologist. Also Jun. Asst. P. £350.
Birkenhead Borough Hospital.—Jun. H.S. £170.
Birmingham, Lodge-road War Pensioners Hospital.—Asst. M.O. £350.
Birmingham Municipal Anti-Tuberculosis Centre.—Sen. Asst. Tubercl. O. £650.
Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Asst. M.O. £200.
Brighton, Royal Sussex County Hospital.—Asst. H.S. £80.
Cardiff, King Edward VII.'s Hospital.—H.S. £200.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—H.S. £50.
Cheltenham Eye, Ear, and Throat Free Hospital.—Asst. S. £400.
Chester, Cheshire County Council.—Dist. Tubercl. O. £400.
Crowthorne, Berks, Broadmoor State Asylum.—Asst. M.O. £300–£350.
Cumberland Education Committee.—Two School Dentists. £350.
Dunfermline, Carnegie Dunfermline Trust.—Sch. M.O. £400.
Durham County Council.—Five Asst. School M.O.'s. £600.
Eastbourne, Princess Alice Hospital.—R.M.O. £175.
East Riding Education Authority.—Female Asst. Sch. M.O. £350. Sch Dent. £350.
Evelina Hospital for Children, Southwark, S.E.—H.S. and H.P. £160.
German East Africa Occupied Territory.—M.O.'s. £400–£20–£500.
Glamorgan County Asylum, Bridgend.—Fourth Asst. M.O. £400.
Glasgow, Hawkhead Asylum, Cardonald.—Jun. Asst. M.O. £275.
Glasgow, Scottish Western Asylums' Research Institute.—Director. £600.
Glasgow, Victoria Infirmary.—Visiting P. and Visiting S.
Grimsby and District Hospital.—H.S. £300.
Guy's Hospital, S.E.—Hon. Anæst.
Hackney and Stoke Newington, Metropolitan Boroughs of.—Tubercl. O. £500.
Hatfield Union.—M.O. £75.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P. 30 guineas.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Psychologist, Hon. Ophth. S., and Hon. Asst. P.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £100. Also Asst. Cas. M.O., H.S., and H.P. All £50.
Huddersfield Royal Infirmary.—Asst. H.S. £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.P. £250.
Italian Hospital, Queen-square, W.C.—Hon. Ophth. Surg.
Lambeth Metropolitan Borough.—Tubercl. O. £600.
Leamington, Warneford, Leamington, and South Warwickshire General Hospital.—Res. H.S. £200.
Leeds General Infirmary.—Res. M.O. £150. Res. Obstet. O. £50. Also Res. M.O. at Ida and Robert Arthington Hospitals. £60. Two H.P.'s and Two H.S.'s.
Leeds Public Dispensary, North-street.—Res. M.O. £200.
Lincoln County Hospital.—Jun. H.S. £150.
Liverpool, Hospital for Consumption and Diseases of the Chest, Mount Pleasant.—Asst. M.O. and Pathologist. £175.
Liverpool Infirmary for Children.—Two Res. H.P. and Res. H.S. £90.
Maldon Union.—M.O. and Pub. Vac. £100.
Manchester, Ancoats Hospital.—Res. Surg. O. £200. Also H.S. £100.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Hon. Asst. P.
Manchester Royal Infirmary.—Path. and Med. Registrars. £350 and £75 respectively.
Metropolitan Hospital, Kingsland-road, E.—H.S., Asst. H.P., and Asst. H.S. £100 each.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. Res. M.O. £325.
Mothers' Hospital, 153–165, Lower Clapton-road, E.—Res. M.O.
National Hospital for the Paralysed and Epileptic, Queen square, W.C.—Radiologist.
Newcastle-upon-Tyne, Hospital for Sick Children.—Jun. Res. M.O. £200.
Newport Borough Asylum, Caerleon, Mon.—Asst. M.O. £400.
New South Wales, Department of Public Instruction.—Prinpl. M.O. £900.
Norwich Poor-law Institution.—Res. M.O. £350.
Preston, Lancashire County Council.—Asst. Disp. Tubercl. O. £550.
Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. £200. Also Jun. H.S. and Jun. H.P. £120.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Dist. Res. M.O. £80.
Queen Mary's Hospital for the East End, Stratford, E.—H.S. £150.
Reading, Berks Education Committee.—Sch. Dent. £400.
Rotherham Hospital.—Jun. H.S. £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Hon. Anæst. Also Cas. O. (£100) and Registrar.
Royal London Ophthalmic Hospital, City-road, E.C.—Curator and Librarian. £200.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Surg. Registrar.
Royal Westminster Ophthalmic Hospital, King William-street, West Strand, W.C.—Non-Res. Asst. H.S. £40.
Salisbury General Infirmary.—H.S. and Asst. H.S. £200 and £150 respectively.
Seamen's Hospital, Greenwich.—House appointments.
Serbia, Serbian Relief Fund Hospitals.—Surg.
Sheffield Royal Infirmary.—H.S. for Ear, Nose, and Throat. £150.
Southend-on-Sea County Borough.—Tubercl. O. £600.
Sunderland Royal Infirmary.—Sen. H.S., Two Jun. H.S.'s, and H.P. £250 and £200 respectively.
Swansea General and Eye Hospital.—H.S. £250.
Taunton and Somerset Hospital.—Res. Asst. H.S. £150.
Truro, Royal Cornwall Infirmary.—H.S. £170.
Weston-super-Mare, Somerset County Education Committee.—School Oculist and Med. Inspec. £450.
Whitehaven and West Cumberland Infirmary.—Res. H.S. £180.
Wolverhampton and Staffordshire General Hospital.—H.S. £200.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Malton (York).

Births, Marriages, and Deaths.

BIRTHS.

BRIMBLECOMBE.—On Sept. 10th, at Willow Bank, Martock, Somerset, the wife of S. L. Brimblecombe, M.R.C.S., L.R.C.P., of a son.

DENT.—On Sept. 9th, at 21, Endsleigh-street, to Lieutenant R. W. Dent, H.M.T.S. *Monarch*, and Dr. Patricia Dent (*née* Barnes), of Okeburn, Ambleside Avenue, Streatham, a daughter.

DOLL.—On Sept. 8th, at Hill-street, Knightsbridge, the wife of Dr. H. William Doll, of a son.

ORAM.—On Sept. 11th, at St. Michael's Lodge, Deepcut, Farnborough, Hants, the wife of Captain A. R. Oram, M.C., R.A.M.C., of a son (Richard).

MARRIAGES.

BROUGHTON-HEAD—BLAND.—On Sept. 10th, at Christ Church, Brondesbury Park, London, N.W., Leslie Charles Broughton-Head, M.B., L.D.S. Eng., to Dorothy, elder daughter of George R. Bland, Brondesbury Park, N.W.

CONNAN—MACKINTOSH.—On Sept. 11th, at Trinity Presbyterian Church, Donald Murray Connan, M.B., B.S., to Annie Dorothy, second daughter of Rev. Eneas and Mrs. Mackintosh, of Temuka, Alton, Hants.

HARVEY—DOHERTY.—On Sept. 15th, 1919, at St. Pancras Parish Church, London, by the Vicar, Rev. E. L. Metcalfe, M.A., and the Rev. E. Harvey, M.A., brother of the bridegroom, Joseph Harvey, Captain, R.A.M.C. (T.C.), youngest son of the late Mr. John Harvey and Mrs. Harvey, Rathmines, Dublin, to Winifred Eleanor, fifth daughter of Mr. and Mrs. W. Doherty, Claremont, Western Australia.

STIELL—HOLLAND.—On Sept. 15th, at Nettleham Parish Church, Lincoln, by the Rev. C. K. Watkins, William Fletcher Stiell, M.R.C.S., L.R.C.P., younger son of Dr. and Mrs. Stiell, of Clapham, London, S.W., to Margaret, younger daughter of Mr. George Holland and the late Mrs. Holland, of "Kelvin," Lime Tree Avenue, Retford.

WRIGHT—DEAN.—On Sept. 9th, at Metheringham, Charles Samuel Eric Wright, M.B., to Kathleen Mary, only daughter of Mr. and Mrs. J. H. Dean, Heath House, Nocton, Lincoln.

DEATHS.

ECCLES.—On Sept. 9th, at Upper Norwood, William Soltau Eccles, M.R.C.S. Eng., aged 76 years.

MACNAB.—On Sept. 12th, at Lansdown-place East, Bath, Robert Macnab, M.D. Glasg., F.R.C.S. Edin., aged 78 years.

MEEK.—On Sept. 15th, suddenly, at Frimley, Wilfrid Ombler Meek, M.B., B.S. Lond., in his 40th year.

RANKIN.—On Sept. 14th, at The Orchard, Helford, Cornwall, Guthrie Rankin, M.D., F.R.C.P., and of 9, Harley street, London.

N.B.*—*A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary for the ensuing Week

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

LONDON HOSPITAL MEDICAL COLLEGE, in the Clinical Theatre of the Hospital.

A Special Course of Instruction in the Surgical Dyspepsias will be given by Mr. A. J. Walton:—

MONDAY, Sept. 22nd.—4.30 P.M., Lecture XV.:—Foreign Bodies, Rupture of the Stomach, Gastric Adhesions, Acute Dilatation of the Stomach.

FRIDAY.—4.30 P.M., Lecture XVI.:—Technique and Complications of Gastric Operations.

Communications, Letters, &c., to the Editor have been received from—

A.—Army Medical Service, Lond., Director-General of; Dr. H. W. Armit, Sydney.

B.—Surg.-Commdr. W. Bastian, R.N.; British Fire Prevention Committee, Lond.; Dr. E. C. Bousfield, Lond.; British Organo-therapy Co., Lond.; Dr. D. T. Barry, Cork; British Federation of Medical and Allied Societies, Lond.; Dr. G. Blacker, Lond.; Dr. H. F. Barton, Lond.; Major W. Byam, O.B.E.

C.—Mr. B. F. Conolly, Lond.; Mr. F. B. Cornell, Whitley Bay; Dr. E. F. Cyriax, Lond.; Mr. A. Crafu, Worthing; Charing Cross Hospital Medical School, Lond., Governors and Staff of.

D.—Sir H. B. Donkin, Isleworth; Dr. P. W. Diack, Lond.

E.—Dr. R. Eager, Exminster; Dr. J. Elliott, O.B.E., Chester; Dr. R. B. Eccles, Driffield.

F.—Factories, Chief Inspector of, Lond.; Food Education Society, Lond., Hon. Sec. of.

G.—Mr. H. T. Gray, Lond.; Dr. A. M. H. Gray, Lond.

H.—Mrs. Hogarth, Quainton; Dr. C. T. W. Hirsch, Lond.; Dr. H. Head, Lond.

I.—Dr. H. Illoway, New York.

J.—Prof. F. W. Jones, Lond.

K.—Dr. H. C. Kidd, Bromsgrove.

L.—Dr. G. C. Low, Lond.; Mrs. O. Langmead, M.B., Lond.; Dr. R. B. Low, C.B., Lond.

M.—Dr. F. H. Morison, Carlisle; Ministry of Health, Lond.; Major E. F. W. Mackenzie; Dr. C. S. Myers, Etchingham; Mr. A. E. Mahood, Bristol; Dr. I. Moore, Lond.

N.—Dr. H. P. Newsholme, Ripon; Dr. L. E. Napier, Reading; National Board, Young Women's Christian Association, New York.

P.—Pharmaceutical Society of Great Britain, President, Vice-President, and Council of.

R.—Dr. Roland, Paris; Lieut.-Col. Sir L. Rogers, I.M.S.; Dr. J. D. Rolleston, Lond.; Mrs. E. Riach, Lond.; Dr. W. C. Rivers, Worsboro' Dale; Mr. T. H. Robinson, Melton Constable.

S.—St. Mary's Hospital Medical School, Lond., Medical Staff and Lecturers of; Dr. F. J. Steward, Lond.; Dr. W. C. Sullivan, Lond.; St. Marylebone General Dispensary, Sec. of.

T.—Dr. D. Turner, Edinburgh; Major J. Taylor, R.A.M.C.

V.—Dr. R. M. Vick, Lond.

W.—Mr. L. J. Webb, Winchester; Mr. W. B. Woollam, Buxton; Dr. J. Wilson, Belfast.

Communications relating to editorial business should be addressed exclusively to the Editor of THE LANCET, 423, Strand, London, W.C. 2.

MANAGER'S NOTICES.

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Notes, Short Comments, and Answers to Correspondents.

THE ECONOMICS OF NIGHT CALLS.

IT was recently recorded in the obituary notice of a well-known north-country practitioner that throughout his long and active professional life he was able to attend to a series of night calls without deterioration of his day-time work. This ability must surely be passing with the brave age of heroes. The present-day practitioner is of commoner clay, and there must be few who do not experience some loss of attention or of interest in their work after a bite out of the night's sleep. The matter has its bearing, too, from the patient's point of view; a jaded doctor, even if, as we are assuming here, his night-watching is the result of professional engagements, is not worth as much as a fresh one. The Federation of Ratepayers Associations at Johannesburg recently discussed the question, debating whether suitable provision could not be made for procuring medical attention and medicines during the night time. Dr. E. P. Baumann, senior physician to the Johannesburg Hospital, attended by invitation to submit the point of view of medical practitioners. He urged that though the question of fees was a consideration it was not the primary one, and he suggested that some steps be taken to form a panel of junior practitioners to whom night work would be a welcome introduction to the public. His estimate that 99·9 per cent. of night calls were futile and not cases of necessity may have been intentionally picturesque, but he went on very justly to point out the physical strain of night calls upon a practitioner who had spent a busy day. A subcommittee was appointed to discuss the question with the local medical profession and to report to the Federation. Something instructive may come of it.

"STAMMERING AND VOICE DEFECTS."

To the Editor of THE LANCET.

SIR,—With reference to Miss Emil Behnke's comment on the statement I made in my paper on the above subject in your issue of August 23rd, may I say that I think my meaning was rather misunderstood.

I know the late Mrs. Behnke's books on the subject well, and have in the past obtained valuable help from them. By saying that "stammering and functional voice defects have until recently been looked upon as unfortunate disabilities, and no real scientific attempt was made thoroughly to deal with such cases, and hence there was no recognised cure," I mean that stammering and functional voice defects have not until recently been regarded as an evidence of a disease which required specialised medical treatment in addition to specialised speech treatment. As a rule, stammering, &c., patients were sent to teachers of elocution or speech specialists—the cure being left to them entirely—and the *symptom* alone was treated. Now, however, it is generally accepted that the symptom—i.e., stammering, &c.—cannot permanently be cured until the underlying psychic cause has been dealt with, and this latter can only successfully be accomplished by those trained in psychological medicine. My paper, of course, only referred to functional and not to organic voice defects.

I am, Sir, yours faithfully,

Blackheath, S.E., Sept. 10th, 1919. MABEL V. O. OSWALD.

COLONIAL HEALTH REPORTS.

Basutoland.—The report on this territory for 1917-18 states that typhus fever, which had been prevalent for more than a year in certain districts of Cape Colony, appeared in August, 1917. The early cases were nearly all among the Tembu of the Quthing and Mohales Hock districts. Later, cases occurred in the Qacha's Nek district. Energetic measures were at once taken to control the epidemic. Infected areas were strictly quarantined. Recruiting for mines and other purposes was prohibited in the southern districts and every means taken to discourage the movements of natives from one place to another. All infected huts were destroyed by fire, and clothing and other personal effects disinfected by boiling. The death-rate was high—about 50 per cent.—but this resulted in the people, who were thoroughly scared, coöperating actively with the authorities in enforcing quarantines. This would not have been the case had the disease been attended with a low mortality. From August 14th, when the first cases were noted, till Dec. 31st, there were 215 cases with 100 deaths. No Europeans were affected. There was no case of small-pox. A good many men suffering from malarial fever came under the notice of the medical officers.

They were all imported cases, chiefly returned general service boys from German East Africa. Syphilis is still very prevalent, and a proposal is under consideration to inaugurate free treatment for the disease. The general difficulty in dealing with the problem of syphilis in a native territory is the indifference of the people. Most cases have a non-venereal origin (only 16 cases of chancre were seen during the year); the initial lesion is often overlooked, mucous patches on the mouth follow, and the infection spreads from one member of a family to another, and whole villages may be rapidly infected. In a great many instances the secondary symptoms subside without treatment, but not before the patient has passed infection on to many others. Dysentery was again prevalent, but much milder in type than in recent years. There were a few cases of meningitis, mostly tubercular in origin. The general health of the community has been above the average. 1997 in-patients and 32,347 out-patients were treated at the Government hospitals and dispensaries. On April 1st, 1917, there were 181 male and 182 female inmates of the Leper Asylum, and during the year ended March 31st, 1918, 52 new cases were admitted. One patient was discharged as a possibly arrested case; there were 29 deaths and 8 births. Of 43 deserters all but two returned to the settlements. There has been an improvement in the general health of the inmates.

Nyasaland.—In 1917-18 the health of the Protectorate was not satisfactory owing to the extensive movement of natives necessitated by the military operations. Small-pox, which in the previous year was confined to the Dowa and Lilongwe districts, made its appearance in seven other areas. It was found impossible to entirely restrict the movements of natives with a view to checking the spread of the disease, as the increasing military demands for labour had to be made. Owing to the lack of medical officers sleeping sickness investigations had to be suspended. Twenty-eight cases of plague were reported from Karonga in the North Nyasa district, the outbreak being merely a continuance of the one reported in the previous year. The extermination of rats, inoculation, and other preventive measures which were adopted not only checked the local spread of the disease, but prevented its gaining an entry into other parts of the Protectorate. As in the case of plague, cerebro-spinal meningitis was introduced into Nyasaland from German East Africa. It was first observed among the native German prisoners of war who were sent to Zomba for internment. Sixty-seven cases were recorded during the year; the case mortality was high, but of the three Europeans who contracted the disease only one died. The number of Europeans resident, including officials and non-officials, but excluding the military, was 463 males and 215 females. The Asiatic population amounted to 422. The native population is estimated at 1,227,442—approximately 559,810 males and 667,632 females.

NOCTURNAL ENURESIS.

To the Editor of THE LANCET.

SIR,—Can any of your readers suggest treatment for a boy, aged 9, who suffers from incontinence of urine both by day and night? By constant supervision—telling him to pass water every two hours or so—he can be kept dry. He apparently has no "call" when the bladder is full, as he has been known to declare that he did not wish to pass water during the very act of micturition, he not being aware of the fact that he was passing water. He is a well-nourished and apparently healthy boy except that he is a bad stammerer. I am, Sir, yours faithfully,

9, Welbeck-street, Cavendish-square, W. 1, Sept. 10th, 1919. F. ST. J. S.

OCULIST AND OPTICIAN.

THE following letter, signed "F.," appears in the *Times* of Sept. 10th:—

"Even more important than opticians' prices is the verification of opticians' work. My oculist ordered me a change of lenses. I took the prescription to an optician of repute, recommended by my oculist, but the new glasses, luckily for me, pained my eyes, and I went back to the oculist. He found, to his intense indignation, that the prescription had been incorrectly carried out. The optician made the usual excuse of war conditions, and later had the impudence to send me an additional bill for putting the glasses right, which of course I flatly refused to pay. There should be a regular system of verification. Without it the skill of the oculist may be all in vain, and the patient's eyes may suffer irreparable injury. It would be a little more trouble for the oculist to see his patient again, but he would sometimes be as surprised and indignant as my friend was."

We have had occasion to point out that the work of the ophthalmologist may be entirely disorganised by a lack of conscience or knowledge on the part of the optician, adding that in our experience most opticians do their work, as such, extremely well. The real message to the public contained in "F.'s" letter is that it is dangerous to resort to the optician for a prescription for glasses. In "F.'s" case, by falling back on the qualified ophthalmologist, the source of his trouble was detected. A rejoinder to "F.'s" letter appeared on the following day in which the pertinent warning is given that some opticians are not to be trusted, though others are excellent scientific workers.

THE SURGEON AND HIS FAMILY.

THE *patria potestas* was accurately defined by the Roman Code, but in modern civilisation the duties and privileges of the father of the family towards his own household are determined rather by broad views of equity and by the force of accumulated public opinion than by statute. Many of these duties are common to all ranks of society and to all kinds of occupation, but there are special privileges attaching to fathers who possess special qualifications. The school-master helps his son at home with his school lessons; the bootmaker patches the shoes which otherwise go out to be done; the public hygienist exerts in his private family that special supervision in the prevention of disease for which his larger experience qualifies him. It would be absurd to exclude the surgeon from the position of special helpfulness to his own household. The question has been recently discussed in the daily press in the light of a tragic incident. The scanty story relates to a man who, after receiving serious injuries in a shooting accident, was taken to a county hospital where his father, a consulting surgeon, performed an operation upon him, but was unable to save his son's life. No details were given in regard to the urgency of surgical intervention nor what opportunity of assistance or consultation were open to the surgeon. But on general grounds the propriety of a father operating upon his son has been apparently called in question. The argument seems to rest upon the assumption that a surgeon in the position of a near relative cannot offer to his patient the same skill which he could give to a stranger. It overlooks the fact that the whole course of medical training is directed towards transforming the emotion of pity into the instinct of helpfulness. Were this mutation incomplete no medical man would trust himself to be arbiter of human life at all. To the surgeon his art has no affective tone. Blood is simply a corpuscular fluid with certain chemical and physical properties. Small casualties occurring in the house of the medical practitioner are, of course, dealt with as a matter of ordinary routine, the more so probably as the medical man suffers under the disability of not being allowed, in most instances, to pay the colleague whom he calls in. On this account, as well as for convenience, the practitioner frequently gives the anæsthetic to any member of his family when a larger surgical intervention is needed. What is to be regarded as a major operation depends on the skill of the surgeon. In a report recently received from a hospital in India paracentesis abdominis and curettage are classed as such. The hospital surgeon in this country possesses the skill which makes the so-called major operation to him an ordinary everyday task. To deprive him of the privilege of offering his services to members of his family in urgent need would be stupid; his call is often no less clear than that of Abraham to use the knife on his own son.

A TAR-SPRAYING FATALITY.

THE death is reported from pustular dermatitis of a labourer employed in tar-spraying the road. It is stated that some of the tar spray came into contact with his face and neck. Inflammatory conditions of the skin have been known to be set up amongst the workers engaged on moulding pitch into "patent fuel," and pitch, of course, is related to tar. "Pitch cancer" was a matter of inquiry by the Home Office some years ago, and certain protective measures were recommended which the manufacturers agreed to adopt (vide THE LANCET, Sept. 6th, 1913). It seems desirable that similar precautions should be taken by tar-pavers, particularly as the process is conducted on a very large scale on our roadways.

RHEUMATOID ARTHRITIS OF THE SPINE.

Spes writes:—I have a patient who suffers severe pain which I can only relieve by morphia injections—everything else tried has failed to alleviate. Can anyone who has had similar cases give me any help by suggestions?

J. B. D.—It is usual in cities (and a commendable practice) to carry out the work of cleaning and tidying the streets in the small hours of the morning when the traffic is at its lowest.

Temp. Major.—Temporary officers of the Royal Army Medical Corps are not entitled to any gratuity on demobilisation other than the bonus of £60 a year granted to them under the terms of their contract, except in the case of those who have for a period of six months or longer held acting rank higher than that of Captain, and have drawn the Army pay and allowances of the higher rank, in which case they are awarded the gratuity equal to that allowed under Article 497 of the Royal Warrant, less any gratuity which may have already been drawn under the provisions as set forth in the contract for the award of £60 on completion of each year's service.